JAN 25 1927

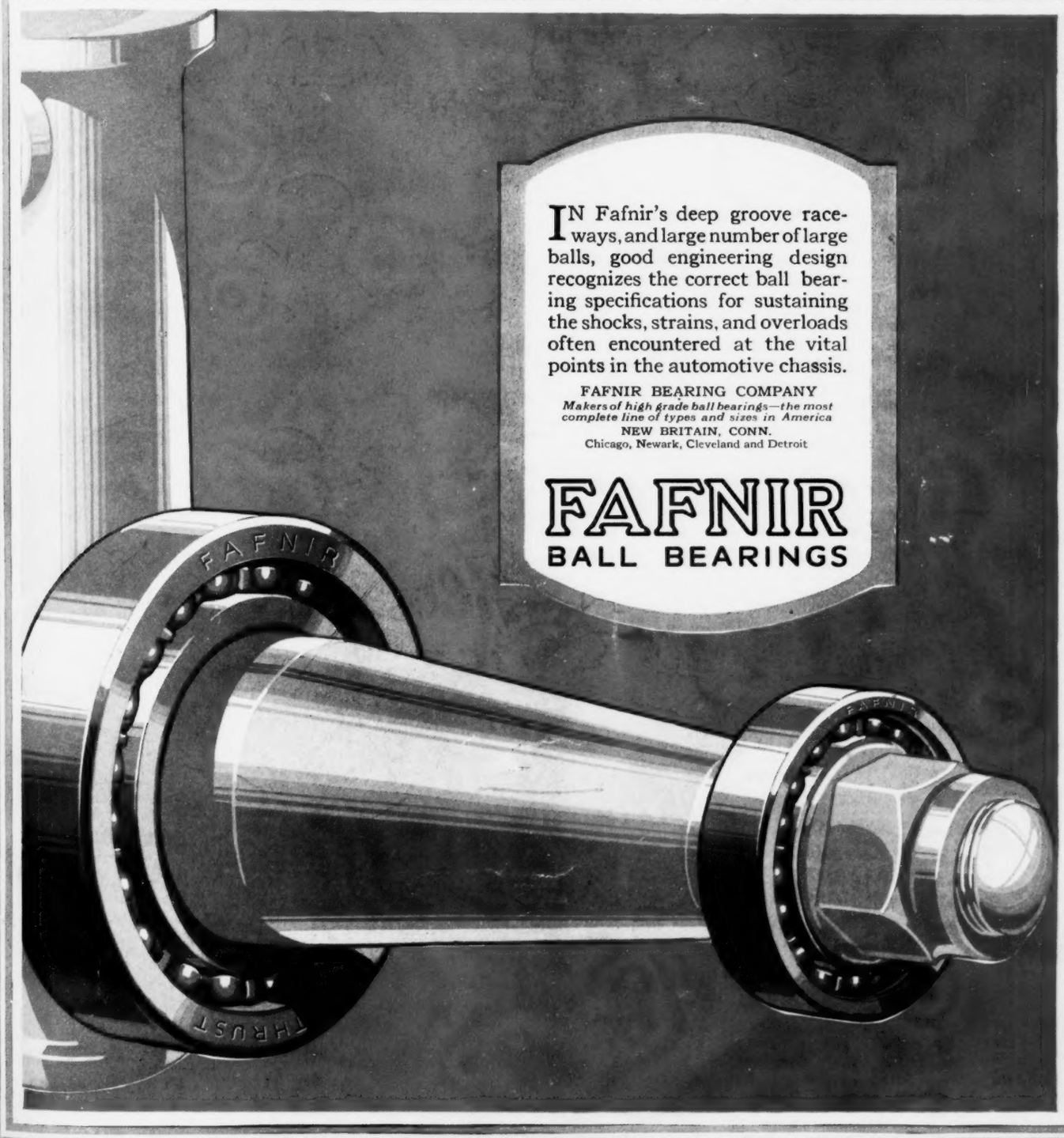
News of the Industry Begins Page 98

AUTOMOTIVE INDUSTRIES

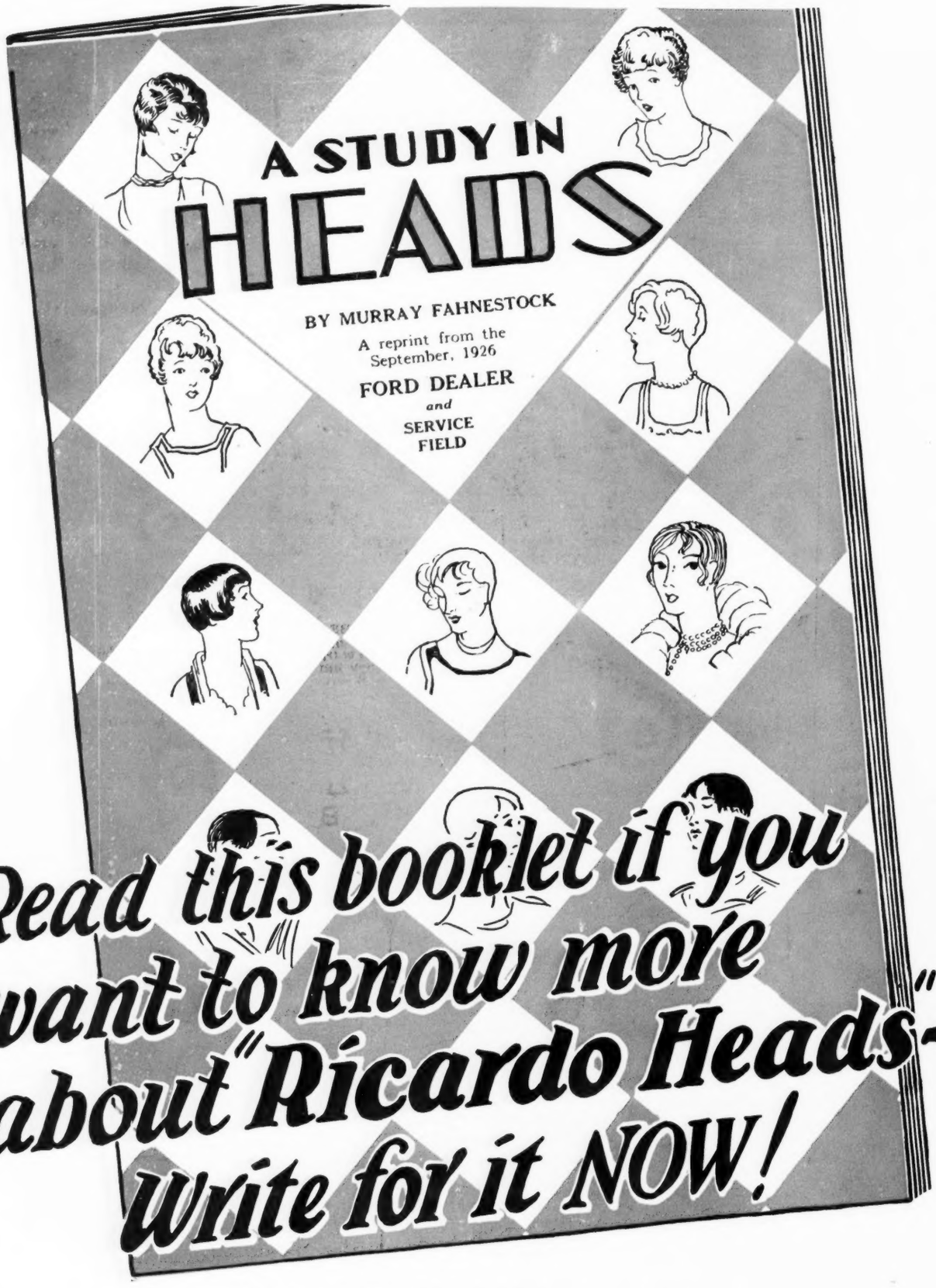
Volume 56
Number 3

PUBLISHED WEEKLY AT CHESTNUT AND 56TH STREETS
PHILADELPHIA, JANUARY 22, 1927

35c a copy
$3.00 a year


IN Fafnir's deep groove raceways, and large number of large balls, good engineering design recognizes the correct ball bearing specifications for sustaining the shocks, strains, and overloads often encountered at the vital points in the automotive chassis.
FAFNIR BEARING COMPANY
Makers of high grade ball bearings—the most complete line of types and sizes in America
NEW BRITAIN, CONN.
Chicago, Newark, Cleveland and Detroit
FAFNIR
BALL BEARINGS
FAFNIR
THRUST

Entered as second-class matter Oct. 1, 1925, at the post office at Philadelphia, Pa., under the Act of March 3, 1879



Read this booklet if you want to know more about "Ricardo Heads"— write for it NOW!

AUTOMOTIVE EQUIPMENT DIVISION

WAUKESHA MOTOR COMPANY

Waukesha **Wisconsin**

Eastern Sales Offices *Aeolian Building, 33 W. 42nd Street* *New York City*

Exclusive Builders of heavy Duty Automotive Type Engines for Over Twenty years

AUTOMOTIVE INDUSTRIES
VOLUME 56 *Philadelphia, Saturday, January 22, 1927* NUMBER 3

Has Coordination With Railways Hurt Bus Manufacturers?

John A. Richie's open opposition to surface car interests in Chicago raises question whether vehicle builders have lost sales by toadying to big operators.

By Norman G. Shidle

HAS the motor bus industry been "coordinating" itself out of a lot of sales in the last few years? Has the attempt of bus makers to keep the good will of the electric railways materially hampered bus sales effort in general?

Would more buses be sold in the long run if the bus industry were to push its just claims vigorously everywhere possible, even when those claims clashed with the financial interests of the electric or steam railways?

Or would it be better to continue the policy more or less generally followed in the last three years of accepting the judgment of existing rail carriers as to the field of usefulness for the motor bus in most of those cases where a possible conflict of interests might arise?

These are just a few of the questions relating to future policy which are being asked in bus manufacturing circles today, partly as a result of a sentiment which seems to have been growing slowly for some time and partly because of the very definite way in which John A. Ritchie, president of the Chicago Motor Coach Co., has joined the bus vs. surface car issue with the electric railway interests in Chicago.

General Attitude Has Been Conciliatory

The hard-hitting, direct battle which Mr. Ritchie is waging in Chicago is in direct contrast to the general approach to similar problems by bus manufacturers in recent years. The policy of refraining from open and definite opposition to street railway interests has been dominant in the bus industry ever since the beginning of the National Transportation Conference back in 1923. That conference, sponsored by Herbert Hoover and held under the auspices of the Chamber of Commerce of the United States, it will be remembered, brought together representatives of transportation interests of all kinds in an effort to formulate principles upon which coordinated transportation policies might be worked out in future specific cases.

The keynotes of that series of conferences were cooperation, coordination and compromise. The various representatives participating, while fighting for their own interests in the preparation of the various committee reports, were more or less dominated by a common resolve to bring out reports on the various problems to which the names of all members of the committee could be signed.

By and large that objective was accomplished. But, as so often happens when agreement is the main objective sought, there seems later to have been a gradual swinging back by the various parties toward propagation of their individual beliefs.

While the bus manufacturers since that time have "played ball" with the electric railways for the most part, the very real conflict of interests which obviously exists in certain instances seems to be showing through on the surface in more places every month.

Now Mr. Ritchie has taken in hand the cudgels of logic and plain speaking and is advocating the use of buses in place of electric surface lines in Chicago in no uncertain language.

Is Mr. Ritchie's Chicago action merely an isolated and purely individual decision as to the best policy to pursue in promoting the use of buses or is it in some sense the crystallization of a sentiment which has grown stronger among other manufacturers in recent months—the precursor of an attitude to be assumed by bus makers in general in the future?

These are questions which scarcely can be answered right now. Their very existence, however, makes pertinent some reasonably close examination of the differences between the Ritchie policy and that which has been common to the bus industry in the recent past, as well as of the economic and marketing fundamentals underlying the whole bus vs. surface car discussion.

It is interesting to note in this connection that the city administration in New York has approved the use of 1000 additional buses on the city streets. This

probably will mean the passing of many trolley lines since over 800 of the buses will be operated by an independent company, many of them in competition with the trolley lines.

The question of future policy, in the minds of some bus executives at least, becomes one of determining whether the bus industry is to function with a positive or a negative attitude toward development of market and sales. Conciliation of rail interests, they argue, makes necessary a passive attitude in many instances. This attitude gradually seeps down through the entire bus sales organization, resulting in relative apathy and lack of dynamic endeavor in pushing bus sales.

IT has become increasingly apparent to those interested in promoting the use and sale of motor buses that maximum utilization of such vehicles is unlikely to be reached by leaving to agencies fundamentally opposed to their use the determination of where they are, and where they are not, suitable.

While a good many railway men today recognize fully the useful potentialities of the bus and are far from opposing its use in all cases, the best that can be expected from them is determination to use buses only where rail service is unprofitable or where it is wholly inadequate to meet the public demands.

Then, too, this group contends, there is no basis for the electric railway claim that street cars are essenital in every case to handling of mass transportation. The argument on this score is well put by Mr. Ritchie in a recent letter to Mayor W. E. Dever of Chicago. Mr. Ritchie wrote in part:

"The modern large capacity motor coach is a more efficient carrier than the street car due to the marked improvement in construction in recent years . . . The motor coach already has demonstrated in actual service in London its ability to handle large masses of people. In London, in 1925, an average number of 5500 motor coaches, with an average seating capacity of 47 persons, carried 1,671,000,000 passengers, or more than were carried by any other facility in that city; more than were carried by the entire Interborough Rapid Transit Company's system of subways and elevated railroads in New York City; and nearly twice as many as were carried by all the steam railroads in the United States together as reported by the Interstate Commerce Commission. This is mass transportation!"

Earlier Statements Contradicted

The new attitude as reflected in the Ritchie report is distinctly in contradiction to earlier statements of bus potentialities as compared to those of electric lines to which automotive interests in general agreed.

The committee, headed by Alfred H. Swayne, which reported to the National Transportation Conference in November, 1923, on the relation of highways and motor transport to other transportation agencies, for example, stated in its report:

"It is believed that the electric railroad is the best medium for mass transportation of passengers and therefore that it should be the foundation of the coordinated transit system of the whole community."

The report also went on to state: "There may be instances where buses, operating in competition with steam and electric railroads, have so flourished as to give rise to the feeling that the new medium was the more economical unit. That condition arises primarily because the bus most frequently operates over what may be termed "preferred routes," where the traffic density is greatest and the length of haul the shortest, but without regard to the needs of the community as a whole."

The ideas promulgated in the Ritchie statement, as well as the implications which cannot fail to be read into them, are directly opposed to any such admission. There can be no misunderstanding Mr. Ritchie's statement that:

"We feel able to do the job of surface transportation in much better shape in the interests of the public than the street cars."

Buses as a Last Resort

The Swayne 1923 report, discussing that type of bus service which is parallel and competitive with that of rail lines and in which the service is practically identical in quality, says that the questions to be answered in such cases are: "Is the service of the rail carrier adequate and satisfactory to the public? If not, can the rail carrier make it so?" These questions would seem to imply the committee's belief that buses should not be used until it has been proved conclusively that the job can't be done on rails, protection of existing facilities being taken as the basic standard of judgment rather than simply assuming at the start that the only basic consideration is that of public service and public interest.

The committee headed by Mr. Swayne of the General Motors Corp., had as members other representative automotive men, such as D. C. Fenner, Mack Trucks, Inc.; A. T. Waterfall, Dodge Bros., Inc.; L. W. Childress, Columbia Terminals Co., St. Louis; and R. H. Matthiessen, Motor Haulage Co., New York.

While it was generally recognized at the time that this report on the relation of motor vehicles to other transportation agencies, like the reports of the other committees to the National Transportation Conference, was more or less a compromise of the conflicting views represented in the personnel, the fact remains that the automotive group at that time apparently was willing to admit, however, reluctantly, that the electric line should be "the foundation of the coordinated transit system of the whole community."

It has become increasingly apparent to those interested in promoting the use and sale of motor buses, that maximum utilization of such vehicles is unlikely to be reached by leaving to agencies fundamentally opposed to their use the determination of where they are and where they are not suitable. While a good many railway men today recognize fully the useful potentialities of the motor bus and are far from opposing its use in all cases, the best that can be hoped—even from this progressive wing of the rail interests—is determination to use buses where rail service is unprofitable or where rail service simply cannot meet the public demands for service.

This attitude seems to have been reflected in the statements made by Arthur P. Russell, president, New England Transportation Co., at the recent S.A.E. Transportation Meeting in Boston. Mr. Russell's company, of course, is the large bus operating unit controlled by the New York, New Haven & Hartford Railroad.

The N.Y.N.H.&H. holds, Mr. Russell said, that the transportation of the public *rightfully belongs* to the railroads and street railways and that these two should be "permitted to continue to perform that transportation service which the public demands." Then he went on to say that "the N.Y.N.H.&H. entered this new field of transportation (i.e. bus transport) *only with the greatest reluctance.*" The italics are ours.

During the recent Interstate Commerce Commission hearings, as a matter of fact, the theme of practically every trolley company executive who appeared was that the electric line regards itself as possessing something like an eminent right of domain to all local transportation business in its field and as possessing automatically the right to operate all the buses necessary in the community it serves. The logical inference to be drawn from this stand, although not so stated, is that the trolley company would be the arbiter of when and how much auxiliary bus service might be needed.

Bus executives are feeling more strongly of late the futility of trusting the future development of the use of their product in any great measure to agencies which enter this new field of transportation only with the greatest reluctance.

The bus industry, naturally, is eager to press the utilization of bus transportation in every case where it can serve adequately and properly the best interests of the public. The development of rail transportation would have been extremely slow and probably never would have reached its present proportions had determination of its sphere of usefulness been left to the judgment of the managers of the old stage coach lines.

It is scarcely reasonable to expect that rail interests will search eagerly for ways to use a means of transportation which has at least potentialities for supplanting the medium in which their present money is invested. Never in the past has the development of a new means of communication had its real impetus toward growth from those financially and otherwise interested in the medium which is to some extent at least to be supplanted.

There are in operation today about 22,363 buses in line and terminal service covering a mileage of 352,800 miles according to findings of the I.C.C. which probably do not contain complete facts about independent bus operations. Of this total the railroads are operating 502 buses over a route mileage of 6838 miles, according to the I.C.C. figures. The American Electric Railway Association data show that the electric railways of the country have in operation about 7749 buses covering a route mileage of over 15,000 miles.

Combination of these figures would indicate the following:

Total common carrier bus line mileage		352,800
Percentage operated by railroads	1.94%	
Percentage operated by electric railways	4.26%	
Percentage operated by steam and electric railways combined	6.20%	
Percentage operated by independents	93.80%	
Total buses in operation as common carriers, I.C.C. compilation		22,363
Percentage operated by steam railways	2.24%	
Percentage operated by electric railways	34.63%	
Percentage operated by steam and electric railways combined	36.87%	
Percentage operated by independents	63.13%	

Thus it appears that the steam and electric railways operate only a minority even of those buses used in common carrier service. If the figures of 45,000 buses in use as common carriers—which may well be more accurate than the I.C.C. figures of 22,363—be taken as a basis, the percentage operated by the rail carriers becomes a little less than 19 per cent.

Then, when the number of buses operated by the rail carriers is compared with the total number of buses in operation for all classes of service, the significance of the independent operator as the real protagonist of the motor bus becomes even more pronounced. Out of the approximately 80,000 motor buses estimated by the N.A.C.C. as now in operation, the electric and steam lines operate about 10.3 per cent.

WHEN the number of buses operated in the United States by rail carriers is compared with the total number of buses in operation in all classes of service, the significance of the independent operator as the real protagonist of the motor bus becomes pronounced.

Out of the approximately 80,000 buses estimated by N. A. C. C. as now in operation, the electric and steam railways together operate only about 10.3 per cent.

It is true, of course, that the rail carriers do constitute a particularly important market for heavy-duty vehicles. It is for this reason, probably, that many of the manufacturers of this type of vehicle have strongly catered to the desires of the railway interests.

Assuming for the moment that a bus carrying 25 passengers or more may be defined as a heavy bus and one carrying less than 25 passengers a light bus, a survey covering 500 or 600 typical bus operations indicates the following:

Equipment in operations controlled by electric lines is divided between heavy and light as to numbers somewhat in the following proportion:

Heavy buses—Light buses: 2.1

Equipment in all operations in general is divided somewhat as follows:

Heavy buses—Light buses: 1.3.

While these proportions are not exact, of course, they are sufficiently accurate to indicate clearly the general status of the market at the present time and to point directly to the reason for the intense cultivation of the electric railway market by many of the heavy bus makers.

Even on this basis, however, it is well to remember that the actual number of heavy buses sold outside the electric railway field doubtless is much larger than the actual number sold in that field. Supposing the proportions given to hold true of the 80,000 buses now registered, it would appear that about 5300 heavy buses have been sold in the electric railway field while something like 18,000 have been sold outside that field. Electric Railway Journal figures, moreover, indicate that electric railways will spend 11 per cent less for buses in 1927 than in 1926.

The fact remains that an overwhelmingly large proportion of the bus market as a whole lies outside the rail carriers even at the present time.

What policy will be dominant in motor bus selling in the future, while uncertain now, probably will be defined within the next 12 months.

Constantinesco Torque Converter Built as Part of Engine

Automatic transmission incorporated in powerplant, which has two cylinders, each practically forming a separate engine. Important feature of the device is an over-running clutch.

CONSIDERABLE interest has been evinced among American engineers in the torque converter developed by George Constantinesco of London. Mr. Constantinesco has written extensively on the principles involved in the operation of his device, but his writings have been of a very abstract nature and have not conveyed any information regarding the actual mechanism. Now, however, a description of the converter, illustrated with both sectional assembly drawings and diagrams, has been published in *The Automobile Engineer* and the converter is no longer a mystery. The drawings herewith are reproduced from our contemporary.

The Constantinesco converter is built as an integral part of the engine, which in the powerplants so far constructed has been a two-cylinder, two-cycle design of approximately 2⅝-in. bore and 2¾-in. stroke, giving a piston displacement of about 81 cu. in. Each cylinder practically forms an engine by itself, the two being placed some distance apart, with the housing for the torque converter between. The two cranks, however, are positively connected by a unit comprising the flywheel and two cranks for the torque conveyor, on opposite sides of the flywheel. The assembly is such that the two engine cranks are opposite or at 180 deg., while each converter crank is at 180 deg. to the adjacent engine crank and the two converter cranks therefore are also at 180 deg. to each other.

An important feature of the converter is what Constantinesco calls a "mechanical valve" but what is generally known in this country as a roller ratchet or over-running clutch. A detail sectional view of this is shown in Fig. 5. The operation of the converter can be best described with reference to the diagrams shown in Figs. 3 and 4, of which Fig. 3 shows the mechanism in the central, and Fig. 4 in an extreme position.

It will be noted that there are two oscillating levers carrying inertia weights A_1 and A_2, which are fulcrumed on the two crankpins of the converter. From the short arms of these oscillating levers links D_1, D_2 connect to

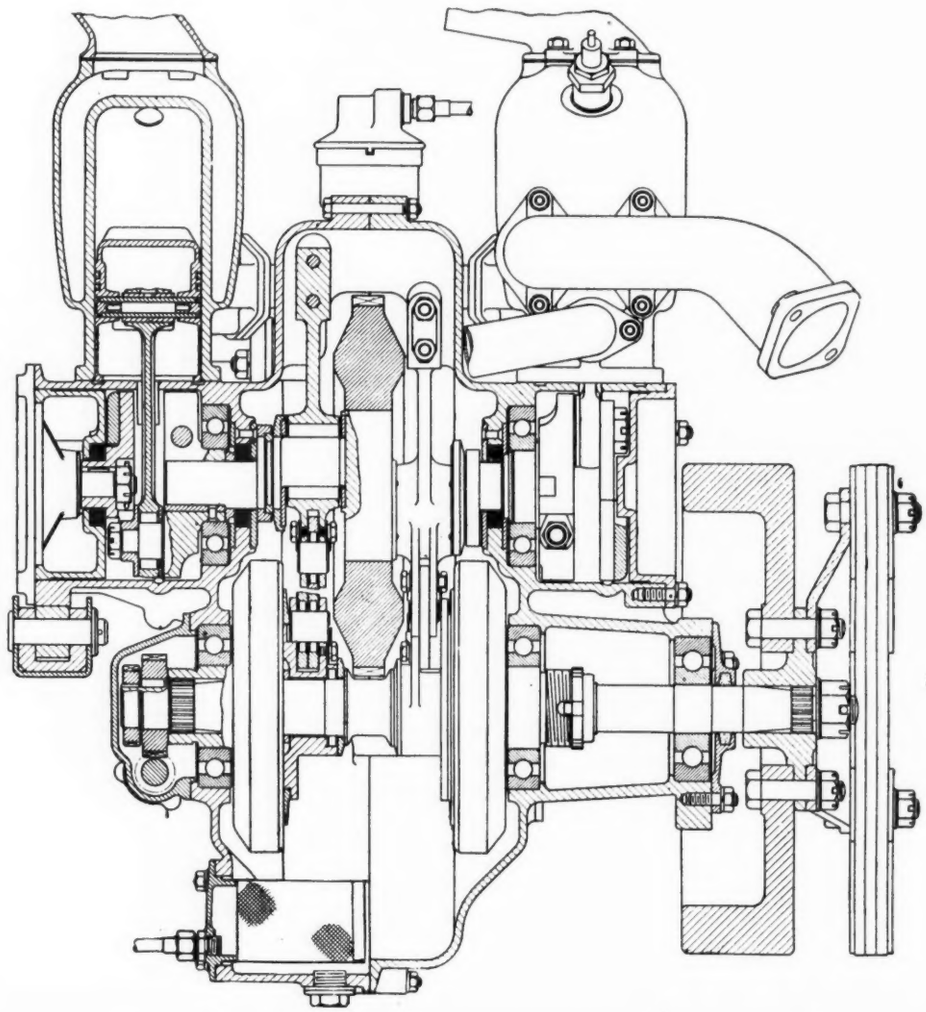


Fig. 1. General arrangement of Constantinesco power unit. Bore and stroke 2⅝ x 2¾ in.

oscillators B_1, B_2, which are secured to the inner or driving members of the roller ratchets, C_1, C_2. From the two oscillators B_1, B_2 links E_1, E_2 extend to a balance lever F through which the two inertia masses are thus connected.

Now assume that the engine is idling. The two inertia masses A_1, A_2 will then be oscillating through a maximum angle as a result of the action of the converter cranks on the levers carrying these masses. Because the rate of oscillation of the masses is low, the resulting reaction is not great and not sufficient to overcome the resistance to motion of the vehicle, hence the links D_1, D_2 will not move and oscillation of the two levers will take place around the axes of connection of the links D to them, except for a slight yield of the mechanism. No motion is imparted to the vehicle.

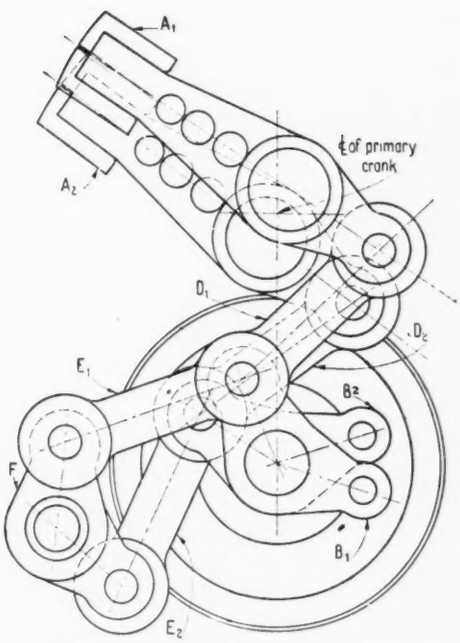


Fig. 3. Diagram of converter gear in central position

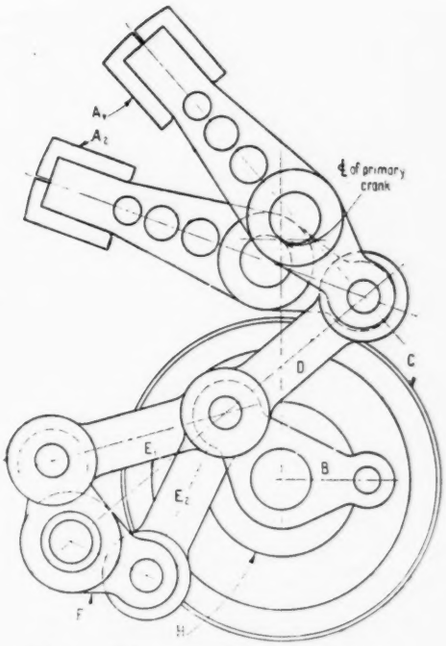


Fig. 4. Diagram of converter gear in extreme working position

If now the speed of the engine is increased by opening the throttle, the reaction due to the oscillation of weights A increases and overcomes the resistance to motion of the car. The result is that links D and all parts connected thereto begin to reciprocate or oscillate, and the oscillation of the oscillators B is converted into rotary motion by the roller ratchets. As the amplitude of motion of links D increases the amplitude of oscillation of weights A decreases, and a position of equilibrium is soon reached where the reaction of the oscillating weights—which, of course, varies with the amplitude of oscillation as well as with the rate—exactly balances the resistance to the motion of the vehicle, reduced to torque around the converter crankpins. The driven member of the roller clutch is mounted on the engine driveshaft which carries a flywheel and a flexible joint for the connection of the propeller shaft.

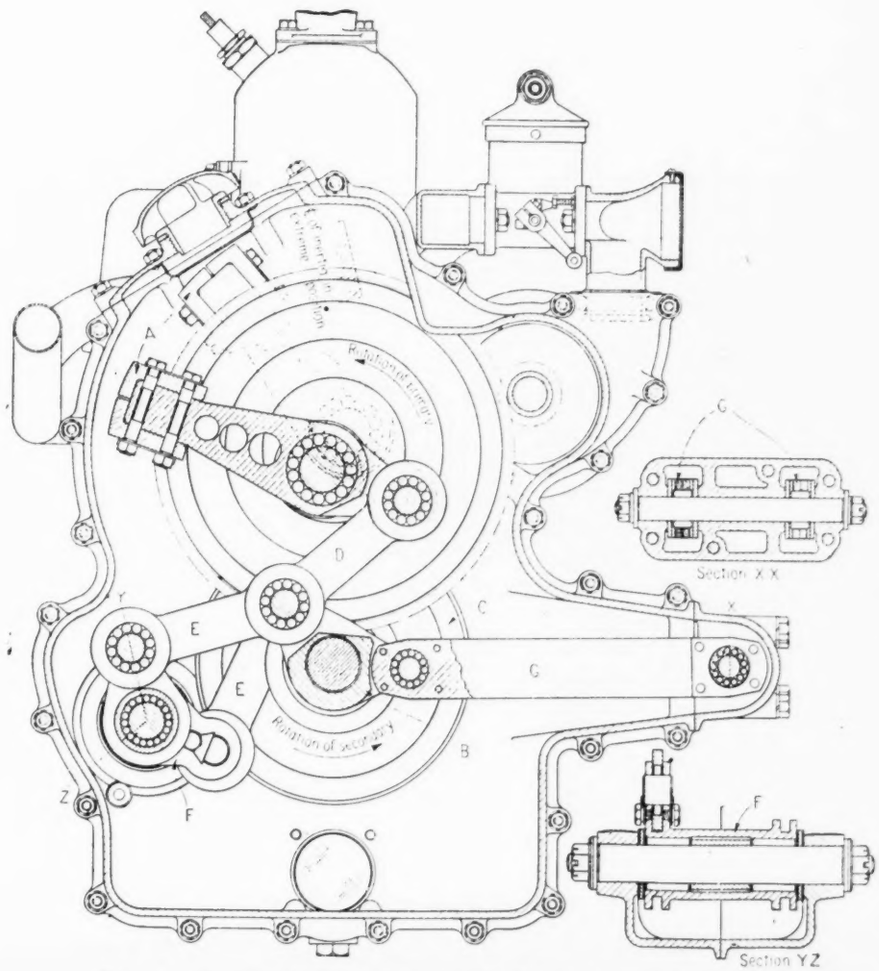


Fig. 2. Cross-section of power unit through converter mechanism

As the throttle is moved to the full open position the engine naturally gathers speed, but as the car speed increases the torque load on the engine grows and shortly a condition of equilibrium is reached where both the car and the engine run at constant speed, which corresponds to high gear operation with the ordinary car. As long as the car is accelerating the throw of links D increases while that of the inertia weights decreases.

If a hill is approached and the resistance to motion increases in consequence, supposing the throttle to re-

main wide open, the car speed decreases, because as long as the inertia weights oscillate through only a small amplitude their reaction is not sufficient to produce a driving force equal to the increased road resistance. At first the engine speed also decreases, nearly in proportion to the car speed, but as the car slows up further and the throw of the links *D* becomes less, the throw of the inertia masses increases and at a certain point during this period of adjustment the engine begins to speed up again, the reduction ratio of the transmission thus increasing. By means of the throttle valve the speed of the car can be varied continuously or by imperceptible gradations.

It can readily be imagined that the one-way clutch presents quite a problem, as it must perform one free and active stroke and engage and disengage once, all during one engine revolution. From the sectional view

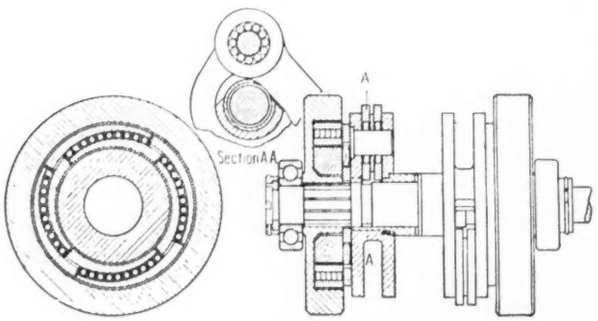


Fig. 5. Constantinesco's "mechanical valve"

it will be seen that the clutch comprises two sets of segmental wedges which are separated by series of rollers occupying almost the whole circumference. During the power stroke the wedges are held in position by springs. Once the rollers and wedges are in contact, the pressure of the drive forces them together more closely so that they secure a firm grip.

With this mechanism a reduction in rotary speed of about 5 to 1 is secured, and the rear axle ratio is made 1 to 1. As the converter gives no reverse drive the reverse gear is incorporated in the rear axle drive. The bevel pinion on the propeller shaft is in permanent mesh with two bevel gears on the rear axle, of which either the one or the other can be secured to the axle by a double jaw clutch. No differential gear is used on the small car to which this powerplant has been fitted. Drive is through the left wheel only, the right wheel being mounted free on the axle.

In starting the Constantinesco car from a standstill, the throttle is opened rapidly instead of gradually, this being made possible by the fact that the torque load on the engine increases only gradually, with the change in motion of the oscillating levers. According to the description in *The Automobile Engineer,* during acceleration there is a certain amount of vibration, but this is of high frequency, and as soon as the vehicle has gathered speed the travel is perfectly smooth.

MEANS for insulating the steering mechanism against road shocks have been incorporated in the steering gears of the three Studebaker chassis. A rubber bushing is fitted over the splined end of the horizontal shaft of the gear which carries the steering arm, and extends into a corresponding aperture in the hub of this arm. The bushing is so designed that the compression of the rubber will permit of an angular deflection of 2½ deg. before metal to metal contact is established and the torque transmitted positively, from the steering arm to the splined shaft. The cushioned joint is said to prevent transmission of road shocks from the front wheels to the steering wheel.

On all three of the Studebaker models the exhaust jackets on the inlet manifolds are now made of aluminum instead of cast iron. Air cleaners are no longer fitted, and the petcocks on the cylinder heads have been eliminated.

A dash manifold heat control was fitted on certain of the models exhibited, and it is understood that such a heat control will be a feature of all Studebaker models before long. The lever for operating the heat control valve is grouped with the choke and spark control lever on a special panel. Manual spark control with a range of advance of 7 deg. is now provided.

New 2½-Ton Valley Truck

THE Dispatch is a new 2½-ton truck being manufactured by the Valley Motor Truck Co., successor to Huffman Bros. Motor Co. of Elkhart, Ind. It is powered with a Hercules, Model OX, four-cylinder, 4 by 5 in. engine, which has removable L-head, force-feed lubrication and inclosed flywheel and is suspended from three points. The engine develops 45 hp. at 2000 r.p.m.

Auto-Lite starting, lighting and ignition system is used. Fuel is supplied from an 18-gal. tank mounted under the cab seat, through a Stewart-Warner vacuum tank to a Zenith automatic, float-feed carburetor. The transmission is a Fuller heavy-duty type providing three speeds forward and one reverse. A Fuller multiple-disk clutch is also used.

Direct drive of the Hotchkiss type employing a two-piece tubular shaft equipped with three Spicer joints supported in SKF self-aligning bearings is used. The worm and nut type steering gear is operated through an 18-in. wheel.

The pressed-steel frame is of channel section, 5½ in. deep with 2½ in. flanges. Five gussetted cross members are provided. Semi-elliptic springs are fitted with eight leaves, 42 by 2½ in. in front and 12 leaves, 50 x 3 in. in the rear. All spring eyes are bushed with bronze bearings.

The Wisconsin, double-reduction, full-floating, rear axle is fitted with two complete sets of internal brakes. Disk wheels are standard, mounting 32 x 6 in. tires front and dual rear. Rims are of Firestone make.

Alemite chassis lubrication system is furnished. Standard equipment includes inclosed cab, storage battery, two-unit starting and lighting system, headlights with dimmer and non-glare lenses, electric taillight, ammeter, oil gage, electric horn and and front bumper. Standard wheelbase is 160 in. Length back of driver's seat is 144 in. and loaded height of frame is 29 in.

THE index to Volume 55 of *Automotive Industries,* including issues from July 1 to Dec. 30, 1926, is now ready for distribution. Copies will be supplied gratis to subscribers who request them. Those who have applied for previous indexes will receive a copy of this one as a matter of course.

Service Promotion Work Important Chevrolet Sales Factor

Company cooperates closely with dealers in educating shop mechanics and improving general service facilities. Schools are located in 22 cities. Duco application course offered.

SERVICE promotion work has been conducted by Chevrolet Motor Co. on such an extensive scale during the last two or three years as to make that company one of the leaders in this particular line of endeavor. The work has, in the opinion of executives, been a real factor in promoting the rapid increases in sales volume which Chevrolet has been enjoying, and its success has been so gratifying that the service department is already putting its 1927 plans into operation. Chevrolet's service promotion undertaking may be outlined briefly as follows:

First: A standard shop and tool room layout already has been adopted by 1500 dealers and is proving such a success that the company expects that practically all the direct and larger dealer organizations will have made similar installations by the end of 1927.

Second: The company's service training schools, which have been conducted for several years, have turned out about 8000 men. Chevrolet expects 5000 service station mechanics will take the course during 1927, which is now offered in 22 different schools.

Third: The company is educating dealers in methods of applying Duco to used cars and since January 1, 1926, 2000 dealers have placed Duco application equipment in their garages.

The service promotion department of the Parts and Service Division of the company, operates along two lines. First, it attempts to assist the dealer to improve his service station from the standpoints of layout, tool equipment, organization, methods and systems and to place it on a paying basis, and second, it operates a number of training schools where the dealer or his service men can learn the latest and most efficient methods of properly servicing Chevrolet automobiles.

To carry on more efficiently the work of aiding the dealer with his service problems, the company employs 34 parts and service managers, one in each of the 34 sales zones in the United States. Each of these parts and service managers has from one to three service promotion representatives who are constantly in the field endeavoring to render every assistance possible to the dealers.

An outstanding feature of the company's program is a standardized method of shop arrangement, which consists of a tool room layout and work line, so arranged that the work can be carried on in a systematic manner to produce the greatest possible efficiency and to make the working conditions in the service station agreeable.

To make this program flexible the company has two types of layout, one for the dealer employing four or more mechanics in his service station and the other for the smaller dealer. For the tool room, the company has a standardized line of tool equipment for overhaul work on Chevrolet cars. These tools were designed under the company's supervision and the company has provided a central source through which the dealer may obtain them.

The company favors use of the flat-rate system and provides the dealer with a flat-rate chart. The plan includes also a wage incentive to mechanics in the form of a bonus based on increased production.

Field men in the various zones visit the dealers to help them in their service problems.

Besides assisting the dealer in laying out his shop, the department also renders aid in arranging the parts stock and in estimating the amount and kind of parts that he should carry.

Direct-mail material and special mats are made available from time to time to the dealer who desires to use newspaper advertising space as a means of bringing owners into the service station.

Combined with the physical side of Chevrolet's service promotion program is the task of training dealers and service mechanics in the proper method of servicing cars, which is being carried out on a big scale in the 22 service schools permanently located in various cities.

There is a resident instructor at each school. The course consists of five days' instruction and demonstration in the practical application of standardized repair methods. Classes are limited from six to eight and the students, under the direction of the instructor, who is a trained mechanic, actually operate all the various special tools.

The Duco application schools are operated under the same direction as the mechanical classes.

Features of Chevrolet's Service Promotion Program

THE Service Promotion Department of the Chevrolet Motor Co. operates along two lines:

First, it attempts to assist the dealer to improve his service station from the standpoint of general layout, tool equipment, organization, methods and systems, and to place it on a paying basis.

Second, it operates a number of training schools where the dealer or his service men can learn the latest and most efficient methods of properly servicing Chevrolet automobiles.

To carry on this work the company employs 34 parts and service managers, one in each of the 34 sales zones which have been established in the United States.

Scrap-Iron *Briquettes* for *Cupola* Use *Effect* Saving for Dodge

Borings and turnings in compressed form substituted for 10 per cent of pig iron with saving of about $10 per ton. Huge compressing machine run by one man. Briquettes weight 7 lb.

By W. L. Carver

APPROXIMATELY 50 tons of cast-iron scrap are returned to the cupola every day in the form of briquettes at the foundry of Dodge Brothers, Inc., when the plant is in full operation. Formerly this scrap, in the form of borings and turnings, was sold. Substitution of these briquettes for the equivalent amount of pig iron produces a saving of about $10 per ton, and, as the scrap comes from iron of known analysis, simplifies the control of new heats.

In the past, various attempts at the utilization of cast iron scrap have been made but ordinarily each was subject to some drawback. Usually the turnings were inclosed in lengths of stove pipe to prevent blowing out of the stack but this method involves relatively high labor charge. In the new process, one man operates the briquette machine and the incidental conveyor equipment and labor is further reduced by the hopper system which supplies the machine.

Chips are collected from adjacent buildings in hopper dump cars of 1-ton capacity which are delivered to a floor grating, as shown in Fig. 1, by elevating electric trucks. The hopper cars are dropped at this point and are unloaded by the operator of the briquette machine, which is inclosed in a steel and glass building in the rear. Beneath this grating is a horizontal steel plate upon which chips are transferred to a pit below the machine by the blades of a continuous chain conveyor.

Vertical Bucket Conveyor

. From this pit, transfer to a 50-ton bin above the machine is made by a vertical bucket conveyor. Finally, gates from the bin convey the scrap to the hopper of the briquette machine.

As shown partially in Fig. 2, the briquette machine is a mammoth horizontal affair equipped with drive motor, several reduction gears, the main crank, rod and compressor piston at the head end. Heavy cast-steel structural members join the head with the lower end of the machine while a system of rods, links and compounded bellcranks driven from the head controls the second piston head, against which the main piston forces the chips.

The various components of the machine are timed and arranged to uncover a loading port which communicates with the hopper. Then, as this port is closed, the main piston advances to produce the compression and withdraws, after which the briquette is ejected and the loading port again is uncovered. Scrap drops into a predetermined space so that the size of the briquette and the stresses on the machine are controlled.

An unusual feature of the machine is a hydraulic balancing system which prevents breakage of any of the machine components under the terrific stresses involved. Neither the main nor the opposed piston is a solid unit but each comprises two units with an intermediate water space; that is, the connecting rod actuates a piston in one end of a cylinder which acts on a column of water which in turn acts on the compressor plunger at the opposite end of the cylinder. The water columns of the cylinders at both ends of the machine are connected by high-pressure piping to a balancing tank which is of relatively large cross-section. This tank incorporates an air dome in which the air pressure is regulated to the critical point. When stresses exceed the capacity of the machine, a slight amount of water backs up in the balancing tank and a safety valve in the air dome blows off. As the cycle continues the safety valve closes and a regulating valve in the intake air line restores normal air pressure in the air dome. The hydraulic balancing system also assists in providing constant high pressure during the later stages of the formation of each briquette.

No binder is used in this briquette process. The main ram or piston develops a pressure of about 40,000 lb. per sq. in. on the 4 in. diameter of the briquette and produces what amounts to an amalgamating action between the individual chips of the charge. In the final form the length of each briquette is just over 3 in. and the weight 7 lb. The unit weight is about 10 per cent less than that of ordinary cast iron. The finished briquette is sufficiently hard and coalescent to withstand all subsequent handling incidental to transfer within the cupola.

An idea of the action in the process may be gathered from the fact that occasional chips which drop out as the compressor chamber opens are red hot although the complete briquette does not attain any great heat. This machine, which has a capacity of 50 tons in 24-hr. operation, was built by the Southwark Foundry & Machine Co., Philadelphia, Pa.

As briquettes are ejected as shown in Fig. 3, they drop on another horizontal conveyor which runs lengthwise of the machine and communicates with a vertical conveyor as shown in Fig. 4. The latter conveyor communicates with another horizontal conveyor which discharges the briquettes into bins at the cupola charging deck as shown in Fig. 5.

Electric controls for all of the conveyor units and the briquette machine are centralized to facilitate control by the single operator. The output of this machine has replaced about 10 per cent of the pig iron used before its installation.

In addition to this utilization of scrap cast-iron turnings in the form of briquettes, the steel scrap which is requisite to all heats comes only from the Dodge shops. As the analysis of all of this steel is taken when the material enters the plant, the foundry mixture is controlled and a high standard of uniform quality is maintained with relative ease. As the foundry cannot consume all of the steel scrap, considerable attention has been devoted to the handling and shipping of this material.

Chutes from adjacent four and eight-story buildings convey scrap from the various departments to a scrap room where large pieces are sorted out. Then the regular run of turnings, etc., is transferred by hand forks to two American Pulverizer Co. crushers, which are installed beneath the floor. As this small scrap is sold, a conveyor receives the crushed scrap and transfers it to gondola cars on an adjacent track. The chief reason for crushing the scrap is to make it more compact and facilitate full car loading. When ordinary uncrushed scrap was loaded, only 25 to 30 tons were accommodated by an ordinary gondola car unless side boards were built up. Now 40 to 45 tons are loaded in each car with practically no manual labor except the sorting and forking in the scrap room.

Outside of assorted small castings which are returned to the cupola, the steel scrap for the foundry comes largely from the pressed-steel department and scrap axles, small steel parts, etc.

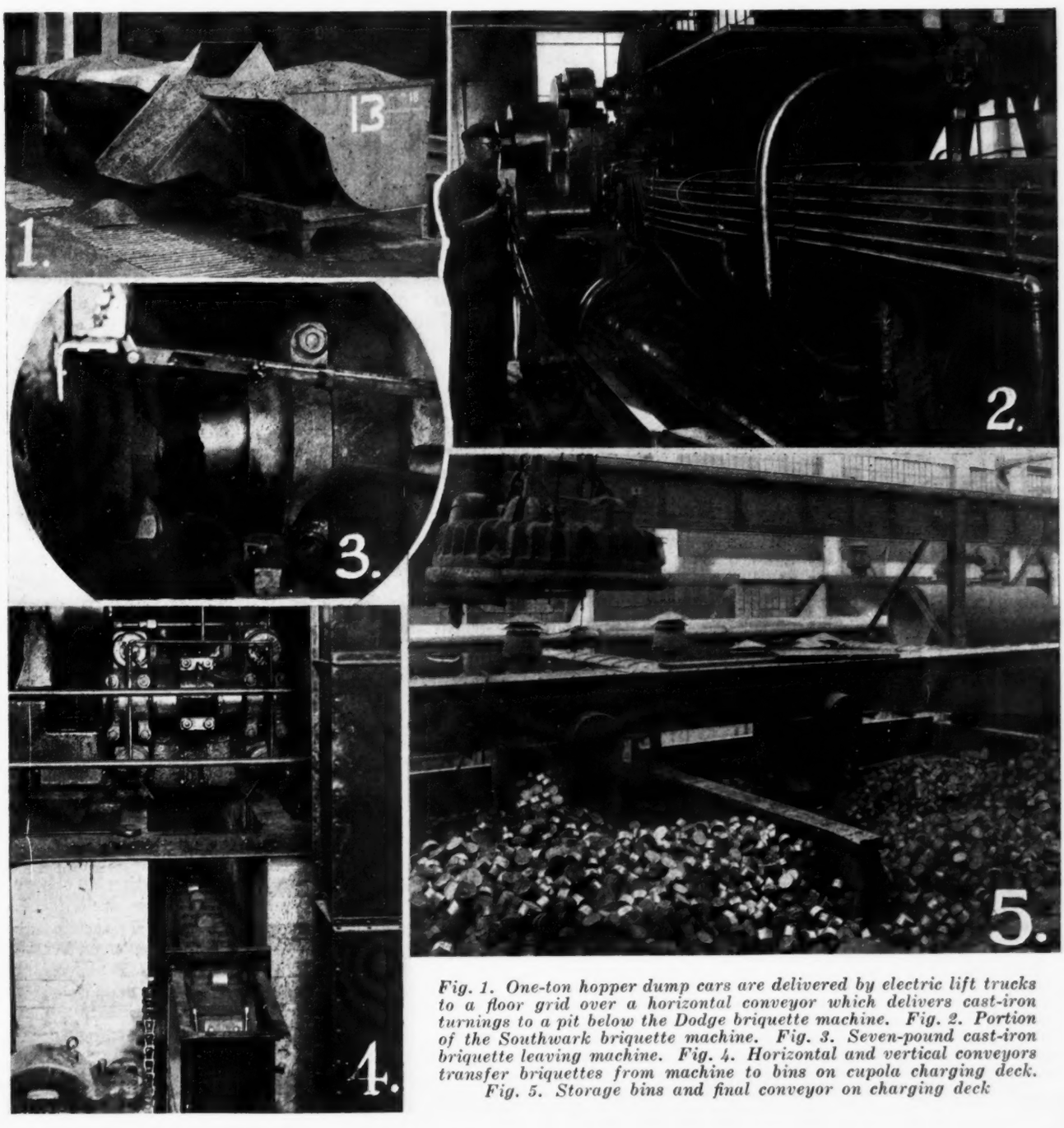


Fig. 1. One-ton hopper dump cars are delivered by electric lift trucks to a floor grid over a horizontal conveyor which delivers cast-iron turnings to a pit below the Dodge briquette machine. Fig. 2. Portion of the Southwark briquette machine. Fig. 3. Seven-pound cast-iron briquette leaving machine. Fig. 4. Horizontal and vertical conveyors transfer briquettes from machine to bins on cupola charging deck. Fig. 5. Storage bins and final conveyor on charging deck

Laws of Some Countries a Handicap to Sales of U. S. Cars

Bureau of Foreign and Domestic Commerce makes study of motor vehicle legislation in export markets to determine its effect on the sale of passenger cars and trucks of American design.

MOTOR vehicle legislation in foreign countries is often of a nature which imposes restrictions upon the sale and operation of cars of particular types. In many countries the laws are so drawn up and interpreted as to increase considerably the cost of operation of motor vehicles of American design over European types. That information concerning these practices is of interest to American manufacturers has been recognized by the Automotive Division, Bureau of Foreign and Domestic Commerce, and the bureau has gathered data concerning taxes and laws affecting automobile sales for a number of representative countries. A summary of this information is presented below.

Algeria. Taxes on automobiles have been superseded by tire and fuel taxes, thus placing a premium upon high tire and fuel mileage. A car license is obtained when the car is purchased and costs 70 francs.

Argentina. Taxes are high and fixed on gross weight but impose no undue restrictions on the sale of American built cars. Right headlights must be green and the left white.

Taxes Lower on British Cars

Australia. Use of standard left-hand drive is prohibited in all states but Victoria which enforces this rule with respect to buses only. In New South Wales and Victoria tail light must be wired so that it can be controlled only by a switch at the lamp. In New South Wales taxes are based on weight with British Empire-built cars paying a shilling less per cwt. than other imported cars. In other states taxes are based on weight and power and appear to have little effect on the popularity of American cars.

Austria. Tax rates are based on horsepower and vary in the different provinces but most of the sales are made in Vienna where the tax rate is $21.70 per horsepower computed by the formula: Horsepower equals number of cylinders times bore in centimeters squared times stroke in meters times 0.3. Miscellaneous fees in Vienna comprise a license fee of $8, a sales tax of 7 per cent on imported cars and a stamp tax of $0.64. Sales of cars powered with engines of large bore are handicapped by the high taxes, but the quality and low prices of American cars have counterbalanced this to a large extent.

British West Africa. Right-hand drive is required in the Gambia and Sierra Leone colonies. Taxation is by weight and penalizes heavy cars and trucks, without regard to their nationality.

Colombia (Bogota). Headlights must be dimmed when two cars meet. Tax rates are based on horsepower and are comparatively low—20 cents per horsepower—so that they have little effect on sales. Driver's license costs about $15 per year. Road taxes are assessed in the form of tolls and amount to about three cents per kilometer per vehicle.

Czechoslovakia. The only factor working against sales of American cars is a luxury tax of 10 per cent levied on cars of four or more cylinders with piston displacement of more than 119 cu. in. Since most American cars fall in this class, while many European cars do not, it has an adverse effect on American car sales as compared with sale of other types.

Danzig. There are no adverse laws or regulations affecting American car sales but a severe economic depression at the present time is reacting on sales of all cars.

Egypt. Cars are subject to a tax of about $5 per horsepower based on the French formula and this has a considerable adverse effect upon sales of American cars. There are other restrictions and taxes which apply with equal effect to all makes of cars and have retarded all car sales in this area.

Finland. Taxes are very low and have practically no effect on American car sales.

France. Taxation on the basis of horsepower ranging from 48 francs to 96 francs per horsepower has constituted a severe handicap to the sale of high-powered American cars.

India. A maximum rating of 20 hp. and a maximum turning radius of 30 ft. for taxicabs have prevented many American makes of cars from being employed in this service. In Calcutta buses must be geared for a maximum speed of not more than 12 m.p.h. Right-hand drive is required in all India except Bombay, where vehicles other than taxis may have left-hand drive but must be equipped with a device for giving signals on the right side. Taxes in Calcutta are moderate and do not affect sale of American type of vehicles. In Bombay heavy vehicles are discriminated against to some extent.

Japanese Regulations

Japan. Tail lights must be arranged for operation only at the lamp itself, and all cars, even open models, must be equipped with a tonneau light. Taxation is very high and is based on horsepower according to the formula: Bore times stroke in inches times number of cylinders divided by three. In the Tokio district, where about one-third of the total Japanese cars are located, tax on cars from five to 10 hp. is about $97; from 10 to 15 hp., $160; from 15 to 20 hp., $245, and over 20 hp. about $310. In other districts taxation is on a flat rate basis and does not offer such a handicap to sales of American cars.

Mexico. Cars and trucks are taxed according to capacity so that there is no discrimination in favor of low powered cars. A gasoline tax is levied on the producers and is added to the retail selling price.

Netherlands. Taxation is based on value and is so high that sales of new cars of all makes are somewhat retarded. An American car with an f.o.b. price of less than $500 is taxed $40 and another listing for less than $3500 is taxed $360.

New Zealand. Regulations and taxes are not restrictive nor in any way discriminatory against American cars.

Norway. Taxes are on a basis of about $1.25 per 100 kilos on all cars except electrics. There is also a luxury tax ranging, according to the price of the vehicle, from 2 to 15 per cent of its retail value.

Peru. Taxation is reasonable and is not considered to have any effect on sales of American cars.

Poland. There are no restrictions which discriminate against American cars and the taxes fixed by the various municipalities are very moderate.

Sweden. Wheel pressures greater than 2000 kilos are not permitted, neither are cars with an overall width of over 2.10 meters unless special permission is granted. Taxation in Sweden is on a weight basis.

Syria. While there are no car taxes which act as deterrents to sales, very high relative taxation of trucks has prevented their rapid adoption in the country.

Tunisia. Taxation is based on horsepower but is scaled so low that it has little effect on sales of high-powered American cars.

Turkey. Here, too, taxation is based on power rating but is too low to have an adverse effect on sales.

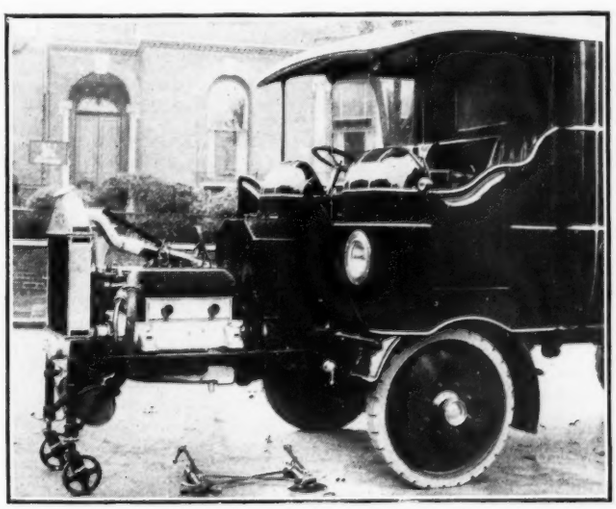
United Kingdom. One white light must be provided on the extreme high-hand side of all vehicles. Right-hand steering is necessary. Taxation is at the rate of £1 per horsepower—the latter being equivalent to the N. A. C. C. rating. This tax places a very great handicap on sales of relatively high-powered cars.

Uruguay. Use of incandescent lamps on publicly-lighted streets are forbidden, and the left front lamp must have a green lens. Neither of these regulations is enforced at present, however. Taxes are too low to affect sales.

Engine "Wheels" Out of New British Truck

THE Lacre Motor Co., one of the oldest of British truck makers, has placed on the market a new 2½-ton model in which ease of maintenance has been given much attention. The most important development in securing this condition is the mounting of the complete powerplant on a sub-frame which can be withdrawn from the front, bringing away the engine, gearset, radiator, fuel tank and muffler without need for uncoupling any controls except the gear-shift selector rods. The advantages of this design, permitting exchange of powerplants so the truck can be kept in operation while repairs are being made to its powerplant at a work bench, are obvious.

The side rails of the main frame are straight and parallel and have inwardly facing channels. The sub-frame is secured to the main frame by 12 bolts—six on each side—passing through the extended ends of cast steel cross members. Each side rail carries two rollers on eccentric pins which permit the rollers to be raised to bear upon the under side of the sub-frame, thus taking the weight off the 12 bolts and allowing the sub-frame to be rolled forward after three taper pins have been removed from the selector rod links.



(Courtesy of *Motor Transport*, London)

Powerplant partially removed from Lacre truck, front end resting on one pair of caster-wheeled jacks, other pair lying on ground ready for fixing at this stage

When the sub-frame has been withdrawn a little way a caster frame is fitted to the front end and a second caster frame is fitted to the rear after it is withdrawn further, permitting the entire powerplant to be wheeled away from the chassis. The makers state that the powerplant can be removed in from 15 to 20 min., although in actual tests considerable less time than this has been required.

The vehicle is of the side-driven type with the driver placed above the engine on the right side. A movable side of the hood gives access to magneto, spark plugs, etc. Electric lighting is standard equipment, the headlights being sunk flush into the front panels of the body.

To enable the spring of the cone clutch to be adjusted easily its nut can be rotated by means of worm gearing and a long cranked handle spanner which operates the worm shaft. The engine of this new model has four L-head cylinders about 4 by 5½ in., developing 30 b.hp. at 1200 r.p.m. Forced lubrication, pump circulation of water and magneto ignition are provided. The cylinders are cast in two blocks, are mounted on an aluminum crankcase and are suspended at four points from arms resting on the sub-frame. Engine and four-speed gearset are separate units.

The gearset comprises double helical wheels permanently in mesh for the indirect ratios and double helical constant mesh pinions. In conjunction with the rear axle—overhead worm drive—ratio of 7 to 1, the indirect gears give ratios of 11.34, 19.6 and 36 to 1; the reverse is 28.9 to 1.

General dimensions are: Wheelbase, 117 in., 126 in. or 144 in.; track, 59 in.; overall length with 117-in. wheelbase, 174 in.; overall width, 77 in.; frame height loaded, 30 in.; ground clearance, 9 in.; turning circle with 117-in. wheelbase, 38 ft.; chassis weight, 5300 lb.

Just Among Ourselves

S.A.E. Detroit Program Looks Inviting

DETAILS of the S.A.E. annual meeting program are out and it looks as though the engineers were due to accumulate a lot of information during their four-days' stay in Detroit, Jan. 25-29. Personally, we are particularly glad to see a session on apprentice training; it's an important problem to which the automotive executive in general hasn't given any too much attention. Notice that college professors and research laboratory men are going to be prominent at the annual meeting this year. About 35 per cent of the total number of speakers either dispense information at institutions of learning or devote their time to seeking scientific truth in government or industrial laboratories. Plenty of practical design and production men will be on the rostrum also and a well rounded meeting should result.

* * *

Ho, Hum! We Meet so Many Big Men!

JOHN WILLYS probably has been interviewed by as many newspaper men as any executive in the industry, not only because of his prominence and activity but because he always has put himself out to some extent to help the men who have come seeking an interview. He has had lots of interesting experiences in being interviewed, but none more worth retelling than that which occurred in Detroit—the home of the industry—not long ago. Mr. Willys told the story himself at his annual luncheon to newspaper men something like this: "When I checked in at the Book-Cadillac a few weeks ago, a reporter from a big Detroit daily sought an interview. I had him come up to the room and did my best to answer his questions, most of which seemed more or less foolish to me. I told him all I knew about the state of the industry, of the Willys interests and a little bit more besides. He must have talked with me for half an hour. Then when I was about run down, he looked up with an inquiring look on his callow countenance and asked, 'You are connected with the Willys-Overland company, aren't you?' " . . . Which to our mind goes to show whatever you think it goes to show, but we thought it a darned good tale.

* * *

Can't Kid Public Long These Days

AN automobile manufacturer can kid the public for a month," said R. H. Grant at the S.A.E. dinner last week, "and he can kid them for two months. But," he continued, "nobody ever yet has been smart enough to kid them for a year and it doesn't look like anybody ever would be that smart." In those few words lies the explanation of the success and of the failure of many automobile companies. The stock market often reacts favorably on the basis of the public's first week's or first month's judgment, which simply offers another reason to doubt Wall Street fluctuations as thoroughly sound indicators of the basic condition of the automotive industry.

* * *

Companies Dropping Finance Subsidies

A GOOD while back we, along with some others, tilted our little lance at the practice of subsidies being paid by car manufacturers to finance companies. The idea seemed to us to be economically unsound as well as to involve a hidden charge not in accordance with the best merchandising practice. Wandering about the hotel halls in New York last week we came upon the information that three important companies which have been paying subsidies for the last year or two are about to discontinue such arrangements as soon as present contracts run out. Seems to us like a trend in the right direction.

* * *

Making Others Understand Us

MEN writing advertising and sales promotion must often get a bit discouraged to find that, even after many months of drilling on the same point, a goodly proportion of their audience still hasn't caught their meaning fully. What makes the writer's job difficult is that, as J. W. N. Sullivan points out in his second series of *Aspects of Science*, "No mind is a *tabula rasa;* any new truth has to be placed within an already existing context. . . . Communication between people who have different kinds of awareness is, except for the ordinary purposes of practice, almost impossible. All their important terms have different significations. . . . There is a certain amount of common ground, of course. In the practical affairs of life, and to a very large extent in the sciences, all men may speak the same language. But the rest of human discourse is concerned with statements which have not exactly the same meaning for any two minds, and where the differences in meaning may be profound." All of which emphasizes the old admonition to copy writers, sales promotion men, and all others whose chief task is to convey a single idea to a large number of people, that a close personal knowledge of the audience is essential to any reasonable degree of success.—N. G. S.

Hercules Building Four-Cylinder Industrial Engine in Three Sizes

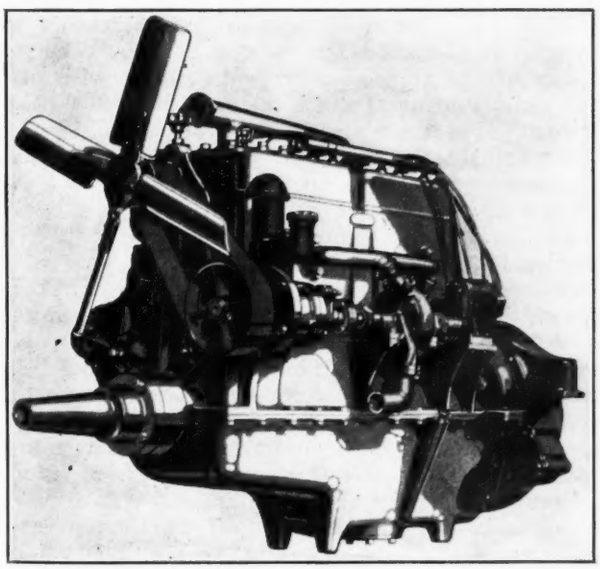
Smallest model has 5½-in. bore, 7-in. stroke and piston displacement of 665 cu. in. Delivers 90 hp. at 1400 r.p.m.

STURDINESS and simplicity are characteristic of a four-cylinder industrial engine which is being built in three sizes by the Hercules Motors Corp. of Canton, Ohio. It is a moderate speed engine and in ordinary service is governed to 1000 r.p.m. In all three designs the stroke is 7 in. and the crankcase and general details are identical. Differentiation is made by varying the bore, which involves the use of different pistons and pins for the three sizes. The bore displacement and horsepower output at 1400 r.p.m. for the three sizes are as follows:

Model	Bore	Hp.	Displacement
TX	5½ in.	90	665 cu. in.
TXA	6 in.	104	792 cu. in.
TXO	6⅜ in.	114	894 cu. in.

The output at 1000 r.p.m. is 15 hp. less than these figures, which do not represent peak outputs but the maximum speed at which regular operation is recommended.

Cylinders and upper half of the crankcase are one-piece iron castings with full-length water jackets of liberal volume. The crankcase pan, which attaches at a flange in line with the center line of the crankshaft, also is cast iron, and two cast-iron cylinder heads, which are identical, are used, each closing a pair of cylinders. The plain side of the block inclines outwardly from the cylinder head joint to the bottom flange in a single line while the valve housing cover on the opposite side inclines at a similar angle, giving the engine a clean, sturdy appearance.



Hercules TX series industrial engine built in three sizes which deliver 75, 90 and 100 hp. respectively at 1000 r.p.m. Arranged for complete electric equipment and magneto ignition

On the left side of the engine are placed the water pump, which discharges into a double branch manifold, and the magneto pad. Drive for the magneto is taken from the rear end of the water pump shaft, which is driven by a flexible coupling from the shaft which carries one member of the gear train and the fan drive pulley.

At the right side of the engine are placed the combined intake and exhaust manifold, carburetor, Hall-Winslow oil filter, and a flange for the generator at the back of the gearcase. Near the rear of the engine an inclined mounting for a governor is arranged with drive taken from the camshaft by the helical gears which drive the pump. The exhaust manifold is placed above the intake portion with a liberal hotspot above the vertical leg of the latter. Carburetor sizes range upward from 1¾ in. for the smallest size.

Some idea of the sturdiness of this L-head engine is obtained from the crankshaft sizes. All three main bearings are 3¾ in. in diameter. Front and intermediate bearings are 4¼ in. long while the rear is 4½ in. Connecting rod bearings are 3 in. long by 3 in. in diameter. Main bearings are carried in bronze back, babbitt-lined split bushings while the rod bearings are babbitted directly into the head of the rod. Connecting rods are 13¼ in. between centers and the hollow piston pins, which are clamped into the rod heads and bronze bushed in the cast-iron pistons, are 1⅞ in. in diameter. Three piston rings are placed above the piston pin and one below, all 5/16 in. wide. All main bearing caps are four-bolt type while the rod caps are secured by two ¾-in. alloy bolts.

Bronze bushings are used for the three camshaft bearings, which are 2⅜ in. in diameter with lengths from front to rear, 4¼ in., 4⅛ in. and 2⅜ in. respectively. The diameter between the cams, which contact with plain tubular lifters, is 1½ in. The upper ends of these hardened steel, cuplike lifters of 1½ diameter are closed by adjusting screws and nuts. The clear diameter of the valves is 2½ in., and the lift ⅜ in. Valve stems are ⅜ in. in diameter.

Full pressure lubrication originates with a gear pump which is located in the rear part of the pan and driven from the same helical gear at the back end of the camshaft as drives the governor. Instead of an oil manifold, individual copper tubes connect the pump with each of the main bearings with a fourth tube for various incidental lubrication points. Heavy flywheels accommodate any standard clutch.

The smallest of the three sizes of engine weighs 1500 lb. net.

Morris' New 15.9 Hp. Model Designed Primarily for Export

Has four-cylinder L-head engine of 153 cu. in. displacement with single-plate clutch and four-speed transmission. Road clearance increased by raising brake gear.

By M. W. Bourdon

AS briefly mentioned in *Automotive Industries* of last Oct. 28, Morris, England's largest automobile manufacturer, has supplemented his existing fours, termed respectively 12 and 14 hp., by a larger four-cylinder model with an overhead engine of 2½ liters (153 cu. in.). The stripped chassis was exhibited at Olympia, but the program in respect of bodywork and full details of the chassis design have just been announced.

This addition to the Morris range has been prepared primarily to comply with the requirements of the export trade, and it is not expected that it will experience anything like so extensive a demand in England as that attached to the smaller models. Only two types of body have been standardized, an open five-passenger, of which the equipment of the top includes rigid-framed side screens opening with the four doors, the latter being 25 in. in width, and a four-door sedan.

To be known as the 15.9 hp. model, the chassis is essentially of a rugged and sturdy character, though considering its dimensions it is not heavy, the complete open car weighing 2800 lb. The frame consists of side rails inswept near the front and upswept above the rear axle and braced by three cross members, which are assisted by three transverse channels attached to the frame by pressed-steel brackets and extending at each side to form supports for the running boards.

A special feature is made of the ample ground clearance, which is 10¼ in. below the rear axle casings and 11½ in. at the lowest point in front. A notable point in this connection is that the whole of the brake-operating gear, both for front and rear wheels, is above instead of below the axles as usual.

The four-cylinder L-head engine, single-plate clutch and four-speed gearset form a unit, three-point suspended in the main frame, the bore and stroke being 3⅛ x 4 15/16 in. The top half of the crankcase and the cylinder block are integral in cast iron, the cylinder head being detachable and the complete lower half of the crankcase forming the oil pan with a false sheet-steel bottom immediately below the big ends. Aluminum pistons with three rings, and duralumin connecting rods are fitted.

The crankshaft is supported by three bearings and the lubrication throughout is by pressure, generated by a plunger pump driven from the center of the camshaft by an eccentric and "strap." Water circulation is maintained by an impeller located in a casing at the front end of the cylinder head and attached to the rear end of the belt-driven fanshaft.

The camshaft, generator and magneto are driven by helical gearing, the generator and mageto being in tandem with a flexible vernier coupling. On the forward face of the front-end-drive casing is an engine-driven tire pump. The carburetor, a Smith, is located on the right-hand side of the cylinder block, flange-fitted to the end of the transverse passage leading to a separate induction manifold on the left-hand or valve side. The positions of the carburetor, magneto and exhaust outlet are such that a claim is made that this model can be driven through 20 in. of water with complete immunity from trouble. The single-plate clutch is self-contained as to end pressure and has eight equally spaced external springs. Bonded asbestos fabric disks are used for friction material, in place of the cork inserts used on smaller Morris cars.

The four-speed gearset, with splined shafts running on ball bearings, provides ratios as follows: Top, direct; third, 1.7 to 1; second, 2.4 to 1, and fourth, 3.5 to 1, the reverse ratio being 4.45 to 1. The gear lever is mounted on the top of the casing, operates through a gate and has a safety catch for the reverse.

Overhead Worm Gear Drive

From the gearset the drive is taken through a single metallic universal joint to the inclosed propeller shaft. The casing of the latter forms the torque tube and has a sliding ball joint attachment to the gear casing, but the drive is taken through the rear springs. The rear axle is of the three-quarter floating type with overhead worm gearing of which the ratio is 3.5 to 1. Double-row ball bearings are used to carry the differential casing and wheels, provision being made for the easy detachment of the hubs.

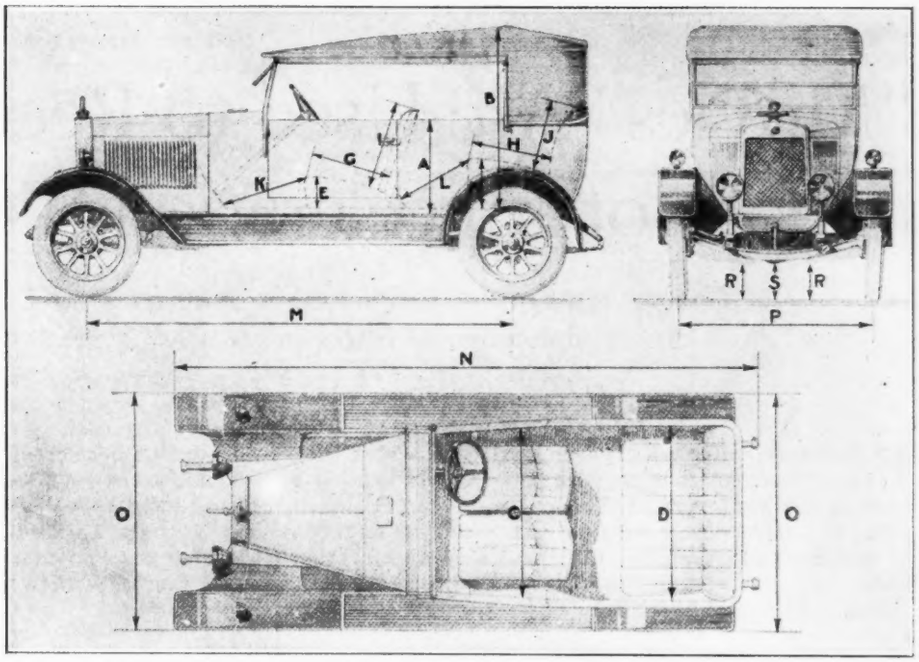
The four-wheel brakes, of the Rubery type, are operated by pedal, while the central hand lever actuates an additional pair of expanding shoes in the rear wheel drums. The wheels are of the hollow pressed steel pattern with a six-stud and nut fitting and equipped with 31 x 5.25-in. Dunlop reinforced cord tires. The springs both fore and aft are half-elliptic, the rear ones being underhung; worm and worm wheel steering gear is used, the column being adjustable for rake and carrying the throttle and ignition levers, as well as a horn button, above the center of the steering wheel. Clutch and brake pedals are also adjustable.

The dashboard is a pressed steel construction, as is the instrument board on which the instruments are grouped in a central oval panel with illumination by hidden rim lights. This central oval is flanked on either side by recesses for small parcels, etc. Lucas 12-volt starting and lighting equipment with five lamps is

used, with double-pole wiring, and a Bendix drive for the starter. The head lamps are fitted to brackets with a dipping control lever alongside the driver to provide an anti-dazzle effect.

As regards bodywork, the open five-passenger has separate and adjustable semi-bucket front seats, at which point the body width is 48 in., the rear seat being 50 in. wide. The upholstery is in leather and of the pleated variety. The standard color is grey (oil varnish finish) with black fenders and a narrow black molding, just below the belt line, extending from the radiator without break to the rear end of the car.

The sedan has unusually wide doors, viz., 30 in. The front seat is a single unit, adjustable fore and aft and as to the angle of the backrest, which is supported by a strap on either side. All six side windows (one in each door and rear quarter) have mechanical regulators, this feature being unusual so far as the quarter lights are concerned. Pleated leather upholstery is used in this body as well as in the open car, though the seat widths are somewhat less, viz., 45 in. at the front and 47 in. at the rear.



Diagrams showing body dimensions of new 15.9 hp. Morris. (See table in accompanying article)

Accessory Equipment

The accessory equipment includes electric and bulb horns, automatic screen wiper, rear driving mirror, roof light, smoker's set, shock absorbers, spring gaiters, oil gun for chassis lubrication, luggage grid and radiator thermometer.

The following are some of the principal dimensions of chassis and bodywork:

	5-Passenger In.	Sedan In.	Diagram Index
Dash to hinge of front door	13¼	13¼	
Width of body over front hinge line	42 19/32	44½	
Width of body over front seat line	50⅝	51¾	
Width of body over rear hinge line	52	51⅞	
Width of body over rear seat line	54	53⅞	
Width of front doors	25	30	
Width of rear doors	25	30	
Width of quarter lights	..	20	
Height of door lights and quarter lights	..	15½	
Height to top of waist rail	24	28	A
Headroom, floor to roof	48½	46½	B
Front seat width	48	45	C
Rear seat width	50	47	D
Height of front cushion from floor	10	10½	E
Height of rear cushion from floor	11½	11½	F
Depth of front cushion (front to back)	21	21	G
Depth of rear cushion (front to back)	21	21	H
Height of front squab from cushion	20	21	I
Height of rear squab from cushion	20	23	J
Legroom (front), ramp to front of cush.	20	20	K
Legroom (rear), ramp to front of cush.	20	24	L
Wheelbase	114	114	M
Overall length (luggage grid closed)	164	164	N
Overall length (luggage grid open)	179	179	
Overall width	70	70	O
Track	56	56	P
Ground clearance (front)	11½	11½	R
Ground clearance (rear)	10¼	10¼	S
Overall height	74	74	

The prices attached to these cars in England are: Chassis, £245; five-passenger, £325; sedan, £375.

Propeller Shaft Balancing Machine

THE Tinius Olsen Testing Machine Co., Philadelphia, Pa., has adapted its balancing machine to the balancing of propeller shafts, and in the photograph reproduced herewith a Spicer propeller shaft is shown in place to be balanced. This machine is arranged with supports and will indicate on dials the amount of unbalance, in ounce-inches, at either end of the shaft, or at the points where correction is to be made. It also indicates the exact angle of such unbalance. The machine is of the latest Olsen center-suspension and computing type. Propeller shafts are held in place by magnetic clutches, and can, therefore, be quickly inserted and removed.

Olsen dynamic balancing machine adapted to the balancing of propeller shafts

The Spicer Mfg. Co. is checking up propeller shafts on machines of this type at the rate of 25 per hour, and a capacity of 150 to 200 per day of nine hours is claimed by the manufacturer of the machine. One of the reasons for this high capacity is the fact that the shaft does not have to be reversed but all necesary readings are taken in one setting.

"Movies" Are Used to Record Results of Acceleration Tests

Unique method employed by Six Wheel Co. of Philadelphia to study movement of instruments used in connection with experimental work with gas-electric bus chassis.

IN the course of some experimental work which they have been conducting with gas-electric type bus chassis, the engineers of the Six Wheel Co., Philadelphia, Pa., have developed two rather unique methods of making and recording the results of acceleration tests.

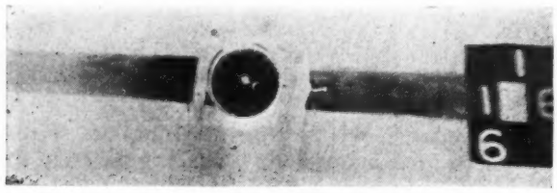
The main principle underlying these methods is that a moving picture camera is employed to record simultaneous movements of various indicating instruments which give information concerning the test.

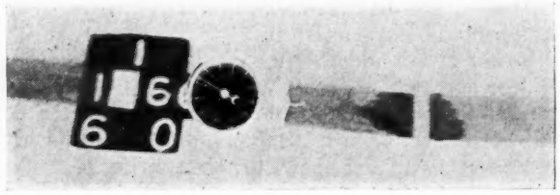
In one test the camera was set up just behind the seat and focused on the instrument board. Besides the usual instruments to be found there, a voltmeter, ammeter and tachometer were installed and also a chronometer which registered quarter seconds. Starting with the chassis at rest and the engine idling, as is shown in Fig. 1, the engine was speeded up and the bus accelerated until it reached a speed of 20 m.p.h. Fig. 2, which is also taken from the film at about midway of the test, shows the speedometer at 10 m.p.h.

From the difference in position of the hand of the chronometer, which has moved from 45 to about 48 during this acceleration, it is evident that about three seconds were required for acceleration from zero to 10 m.p.h. The camera makes 16 exposures per second so that there will be 48 separate photographs depicting the changes in voltage, amperage, engine speed, and other factors, which took place during this period of acceleration.

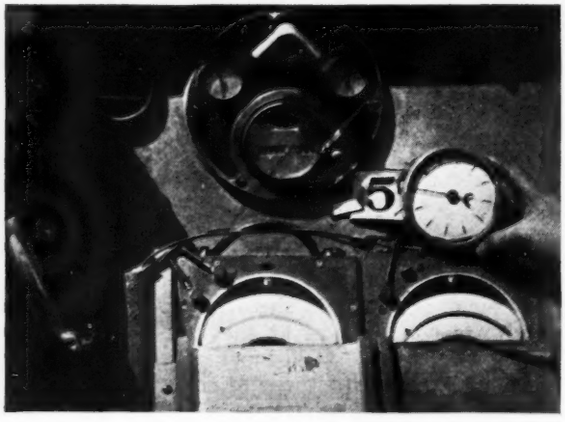
Obviously, with such minute observations which may be flashed on a screen and reviewed as often as is desired, it is possible to determine with great accuracy just what takes place during the acceleration period.

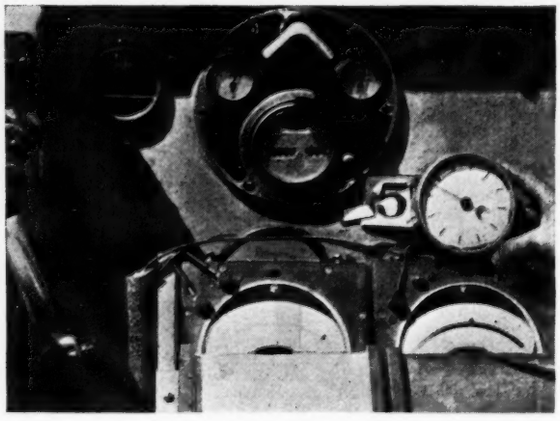
Another method was devised to determine the actual distance covered by the chassis during acceleration. Along one side of a clear, level track several hundred feet long, a white line was painted and divided into feet by black marks with every 10 feet set off by easily discernible squares. A chronometer, similar to the one employed in the experiments described before, was placed on a support extending from the chassis and the camera set up so that it could be focused on the chronometer and the white line simultaneously.





Figs. 3 (left) and 4 (right) are two almost consecutive exposures taken during a test in which actual distance covered by the chassis was used to determine acceleration





Figs. 1 (left) and 2 (right) show two exposures taken in the Six Wheel Co. tests of acceleration. The large figure "5" indicates the number of the test being run

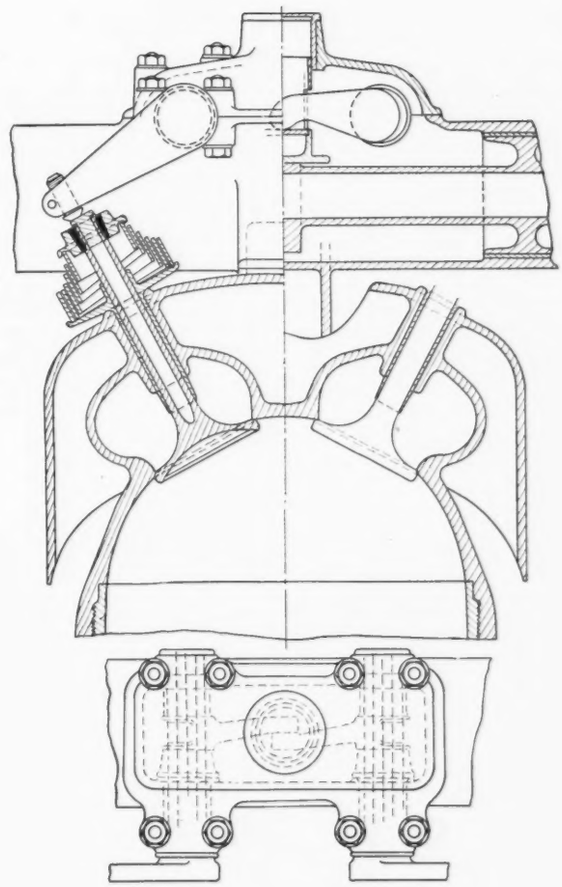
A stud was fixed to the chronometer support to serve as a pointer and to make possible accurate determination of the distance traveled by the chassis. With the chassis resting at any point and then started up the camera recorded on the same film the actual distance covered by the bus and the time required for the movement.

Figs. 3 and 4 show two consecutive exposures taken during a test of this nature. The chassis travels from left to right. In Fig. 3 the chassis is at 159.4, the black mark just to the left of the chronometer being 159 and the square to the right representing 160 ft. In Fig. 4 the chassis has moved about one foot and now is about 160.4. The movement of the chronometer hand during this period is almost indiscernible but it is evident that over longer periods of travel it is possible by this method to obtain very accurate records of acceleration rate.

Valve-Gear for Aircraft Engines

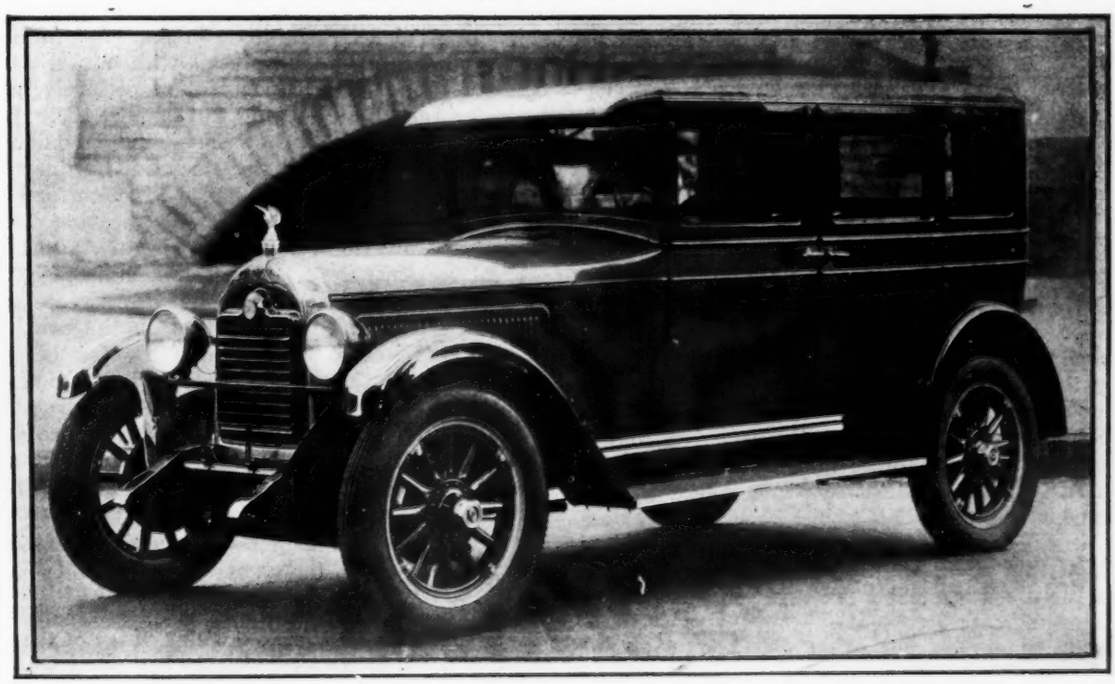
A VALVE-OPERATING gear for use on aircraft engines, giving a radial disposition of the valves in a hemispherical combustion chamber, with the advantage of central spark plug location, has been patented by A. H. Wilde, chief designer to the Hotchkiss Automobile Co., of Paris. As will be seen from the drawing, the whole of the valve-operating mechanism is contained in a two-piece housing fixed laterally to the cylinder head in such a way as not to interfere with the mounting of the intake and exhaust manifolds.

Two camshafts are used, one for each line of cylinders, each tappet and its camshaft lying in a plane parallel to the plane containing one pair of valves. A common tappet imparts the movement to two inlet or two exhaust valves by means of two rockers being held in bearings in the camshaft casing by means of a split cap. It will be realized that there is only one tappet for each pair of valves. The two rocker ends moved by the common tappet are slightly offset and inserted through a slot in the tappet itself, motion being imparted by a hardened washer let into the end of the tappet.



Wilde valve-operating mechanism

New Falcon-Knight Sleeve Valve Six Sedan



This newcomer in the passenger car field, the product of the recently organized Falcon Motors Corp., was exhibited privately in New York last week

Various S. A. E. Aeronautic Standards Recommended for Cancellation

Will be acted upon at a meeting of Standards Committee next week in Detroit. Work in this field hereafter to deal with specifications that will promote interchangeability of parts.

MUCH work has been done by divisions and subdivisions of the S.A.E. Standards Committee during the past half year, and as a result numerous proposals will be submitted for approval at the Standards Committee meeting in Detroit, Jan. 25. Most of the recommendations are for the revision or extension of existing standards and recommended practices.

The Axles and Wheels Division recommends that the S.A.E. standard nomenclature be extended to cover four-wheel brakes, which are not now covered. The Aeronautic Division recommends that the present standards on rubber hose for gasoline, steel wire cable, reels for cable, round, high strength steel wire, steel cable loops, cellulose acetate dope, cellulose nitrate dope and spar varnish, all of which were adopted in 1917 and 1918, be canceled. Conferences are being held periodically by the Army and Navy Air Services, which result in unifying the Army and Navy specifications, and the Division feels that it should undertake no standardization which would conflict in any way with the work of these conferences. In future the Division will confine itself to standardization of specifications that will promote interchangeability.

An extension of the present S.A.E. Standard for Instrument Mountings so as to include a mounting for 2-in. clamp type instruments (oil, gasoline, pressure and temperature gages and volt and ammeters) is recommended by the Electrical Equipment Division. Some additions to standard nomenclature are also suggested by this Division, viz., distributor-rotor electrode (the rotor electrode of gap type distributors) and load-limit controller, for the protective device often included in the generator circuit to prevent overload on a voltage-regulated, shunt-wound generator.

Wiring Color Code Proposed

This Division will also submit a proposed revised standard for ground return wiring systems which has been worked out by a Sub-Division and has been approved by the Division. A proposed wiring color code will be submitted for adoption. This was worked out by a Sub-Division and revised by the Division, and is now believed to be in workable shape. Different codes are given for passenger car wire colors where wire is bought in coils, for use where cable for passenger cars is bought in the form of harness, and for motor coach and truck wiring. The proposed passenger car wiring color code for use where cable is bought in the form of harness is as follows:

Red (unprotected live wires): Generator to cut-out or regulator; cut-out or regulator to ammeter; ammeter to overload breaker or fuse; all other unprotected live wires.

Red with yellow tracer: Low tension or primary ignition.

Red with black tracer: Ammeter to battery.

Yellow (protected live wires): Horn feed wire; signal lamp switch feed wire, body lighting switch feed wires, protective devices to lighting switches, and all other protected live wires.

Brown with black tracer: Lighting switch to junction block (parking lamp), and all ground connections except battery ground.

Black: Lighting switch to tail lamp.

Black with red tracer: Bright head lamps or upper beam.

Green: Dim head lamps or lower beam and signal lamps or switch to lamp.

The Engine Division will recommend new engine testing forms which are a development of the older forms clarifying certain points and increasing the number of curve sheets to six, to better suit engines of different speed and torque ranges. An addition is to be made to the present recommended practice for crankcase drain plugs by specifying a 1⅛-in. hexagon shank for the ⅞-in.-18, straight threaded plug and a 7/16-in. square shank for the ½-in. pipe thread plug. It is recommended that the ⅜-in. taper plug be omitted because it is too small.

The new nickel steels are recommended for inclusion in the S.A.E. standard steels, with nickel ranges of 0.40-0.60 and 1.25-1.75 per cent respectively, the numbers for these steels being 2015 and 2115. Both are low carbon (0.10-0.20) steels. This Division recommends the inclusion of the Rockwell hardness test in the present S.A.E. Recommended Practice for Hardness Tests, with instructions for the application of the test as printed in *Automotive Industries* of August 12.

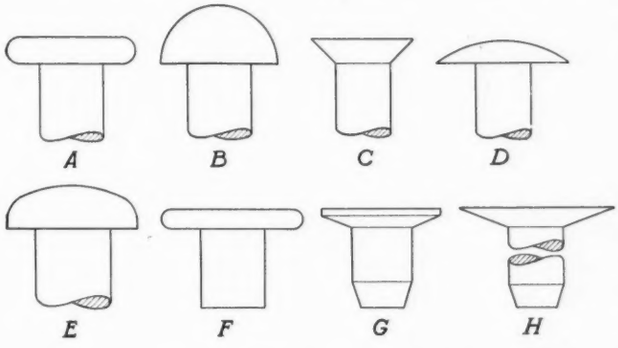
Heat treatments for the molybdenum steels included among the S.A.E. standard steels some years ago have now been worked out, and notes on the use and heat treatments of these steels will, if adopted, be appended to the specifications of the steels but are not to be considered part thereof.

An addition to the Recommended Practice on Headlight Construction is proposed by the Lighting Division, to provide a test for rigidity of mounting. The test is specified as follows:

> With the head-lamp mounting firmly attached to a fixed support, there shall be no permanent distortion of the head lamp as measured by the deflection of the beam, after a steady pressure of 75 lb. is applied for 1 min. to the upper edge of the door in a direction parallel with the head-lamp axis.
>
> With the head lamp mounted on the car in accordance with standard practice, there shall be no permanent deflection of the head-lamp beam due to

distortion of the head-lamp mounting after applying a steady pressure of 75 lb. for 1 min. at the upper edge of the door in a direction parallel with the head-lamp axis.

A technical change is recommended in the specification of the upper limit for the distance from the pin in the base of electric bulbs to the end of the soldered tip. This is now specified as 0.299 in., which implies that it is checked to the thousandth part of an inch, and as no manufacturer attempts to check this dimension thus closely, it is recommended to make this dimension 0.3 in.



Various types of rivet heads of which the dimensions are to be standardized. A, flat head; B, countersunk head; C, button head; D, pan head; E, truss head; F, tinner's rivet; G, cooper's rivet; H, Belt rivet

A Sub-Division has been working out specifications for signal lamps, with the cooperation of the recently organized Automobile Lighting Association, and as a result of its labors the following Recommended Practice is to be proposed for adoption:

Visibility — Signal lamps shall indicate the driver's intention to diminish the speed of, or to stop or to change the direction of a motor vehicle, by displaying a red light sufficiently bright to attract attention in normal sunlight at a distance of 100 ft. to the rear and 45 deg. to the right and to the left of the vehicle. But signal lamps shall not project a dangerously glaring or dazzling light.

Light Intensity—On a line perpendicular to the center of the lamp face the minimum average brightness shall be 2 cp. per sq. in. over the minimum illuminated area of 3½ sq. in.

At all points at an angle of 30 deg. to the perpendicular to the center of the lamp face, the minimum average brightness shall be 0.15 cp. per sq. in. over the minimum illuminated area of 3½ sq. in.

In no direction shall the intensity be more than 25 apparent cp.

It is also proposed that the Recommended Practice for Tail Lamp Mounting be made applicable also to signal lamp mounting. Discussion in the Division indicated the impossibility of an agreement on the wording on the signal lamp glass and on the proper position of the signal lamp relative to the tail lamp.

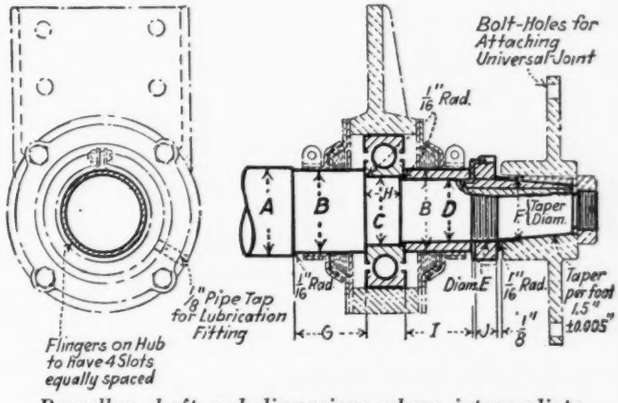
An entirely new Recommended Practice for Tail Light Illumination is also proposed, to take the place of the present Recommended Practice.

In connection with the Standard on Incandescent Lamps of the Focusing Type it is recommended that the tolerance on the light-center length and axial alignment be given in the form of a decimal instead of a common fraction (0.047 instead of 3/64 in.) A suggestion to specify the form and dimensions of the corrugations on the globe was considered impractical, but it is proposed to append to the standard a note to the effect that the corrugations shall be of sufficient depth to break up the filament image. Another note specifies that the spacing between the filaments of the depressed beam or two-filament type of incandescent lamp shall be 0.140 in. plus or minus 0.016 in.

The Motor Truck Division proposes standard dimensions for midship shaft mounting. The type of housing shown in the accompanying drawing is recommended as a satisfactory design, but is not a part of the proposed standard, which latter is confined to the dimensions indicated by letters for basic shaft diameters (A) of 2, 2¼, 2½ and 3 in. No slip joint in the forward section of the shaft is required, as clearance is provided in the housing for the bearing and shaft to slide longitudinally. Where a slip joint is used the housing should be designed according to requirements.

A change in the limits on the bolt hole diameters of flexible disks from basic dimension and basic dimension plus 0.010 in. to basic dimension and basic dimension minus 0.010 in. is recommended by the Parts and Fittings Division. A technical change is to be made in the table of rod end pins, expressing the rod end pin and cotter pin dimensions in common fractions instead of in four-point decimals, which latter imply a degree of accuracy which is not attained in these parts.

The S.A.E. is one of the sponsors of the Sectional Committee on Bolt, Nut and Rivet Proportions, which committee at present is working on new standards for rivets. The forms of rivet which will be considered standard within the range of sizes covered (up to 7/16 in. body diameter) are flat head, countersunk head, button head, fan headtruss-head, tinners', coopers' and belt rivets. Tables have been prepared which in connection with dimension drawings show all dimensions of the different types and sizes of rivet.



Propeller shaft end dimensions where intermediate bearing is used

It is proposed by the Screw Threads Division that high nuts (on which no chamfer is specified at present) shall be chamfered to a maximum angle of 40 deg. with the top face (to prevent excessive chamfering and thus defeat the object of the extra height, viz., a good wrench hold). The Division recommends that the tables covering short lengths be eliminated from the specification for screw thread lengths, and that the following paragraphs be added: Screws too short to take the formula-length of thread may be threaded as close to the head as practicable. Omit the words "usable" and "visible" in the specifications for thread length.

It has been found that the present S.A.E. standard for single plate clutch facings is not being followed by the industry, evidently because it does not meet the requirements, and a revised list of sizes is therefore recommended for adoption.

NEW DEVELOPMENTS—Automotive

Warner Electric Brake

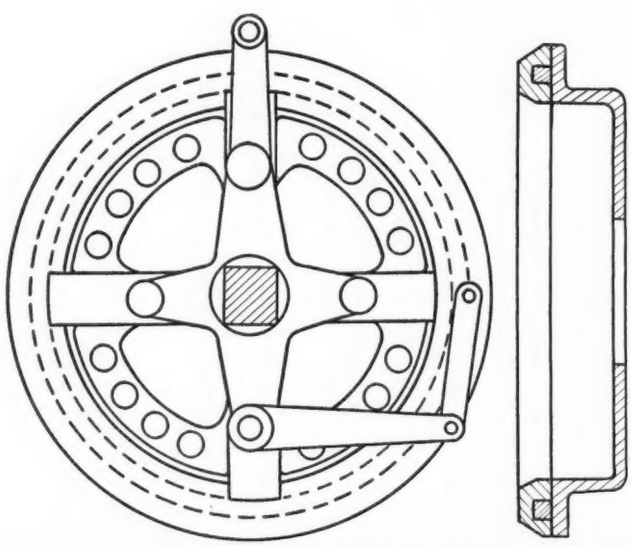
AN electric brake specially adapted for use on heavy commercial vehicles has been developed by the Warner Mfg. Co., Beloit, Wis. The brake is applicable also to passenger cars. Its first regular application will be to trailers manufactured by the Warner Mfg. Co., and the first public exhibition of such an application was made at the Graham Brothers Show, Detroit, Jan. 6-10.

The electric method of operation is combined with a double-cam metal-shoe brake previously developed by the Warner Mfg. Co. As may be seen from the side elevation and section reproduced herewith, the brake drum is provided with a comparatively wide and heavy radial flange, and opposite this flange is placed an annular magnet which is supported by the spider of the brake mechanism. The face of the magnet is in sliding contact with the flange on the drum. When current is applied to the coil of the magnet the latter adheres to the flange of the drum and tends to revolve with it. From the annular magnet there is a lever and link connection to the double cam of the brake, and the brake is thus applied.

It should be pointed out that comparatively little electric energy is required for applying the brake, the energy of application coming chiefly from the revolving wheels. If the magnet had to apply the brake directly it would have to draw an armature or keeper through a considerable distance, in which case the magnetic flux would have to be forced through air gaps of appreciable length, while in this case the magnetic circuit is not only always closed but is of large section and short length. The magnetic pull of a magnet depends upon the number of magnetic lines passing from it into the keeper.

Application of the electric brake is effected by the driver from the cab, either through the service brake pedal or through a separate lever. Current from the regular electric system of the truck, or a special storage battery if the truck has no such system, is used. It is passed through a rheostat, and since there is a retracting spring on the linkage, the harder the driver presses on the pedal or lever, the more current will flow and the harder the brake will be applied.

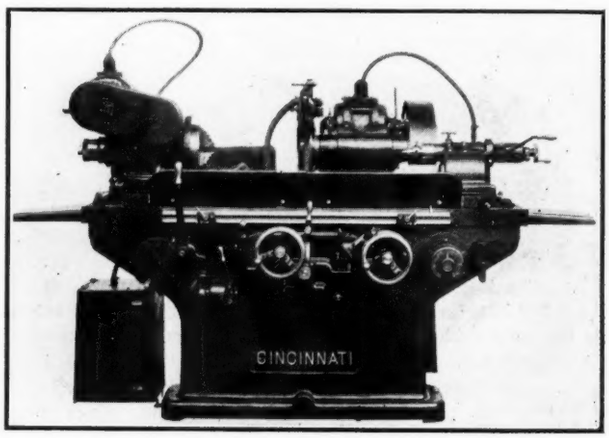
Trailers equipped with this brake come completely wired, and contact is established automatically through a connection in the king pin. The fifth wheel of the tractor is wired before it is set in place.



Diagrams showing principle of Warner electric brake

Self-Contained Grinder

A SELF-CONTAINED universal grinder has been marketed by Cincinnati Grinders, Inc., Cincinnati, Ohio. This machine is similar to the countershaft drive of machine both in dimensions and range. It is driven by three electric motors—one for the headstock, one for the grinding wheel spindle and one for the work table and the coolant pump. The first mentioned motor is mounted in the headstock housing, and the drive to the headstock plate is by means of a silent chain and worm. The worm gear runs partly submerged in oil, which insures thorough lubrication of the worm drive. Wear in the drive chain can be compensated for by adjusting the motor frame on the headstock housing. The headstock motor is a ¾ hp. direct current, 230-volt variable speed motor, the speed range extending from 600 to 1800 r.p.m.



Front view of Cincinnati motor-driven grinder

The drive to the wheel spindle is by an endless belt with automatic tightener from a 5 hp. constant speed (1700 r.p.m.) motor. A 1 hp. constant speed (1150 r.p.m.) motor drives the speed change box for the work table and the coolant pump.

Gilmer Radiator Hose

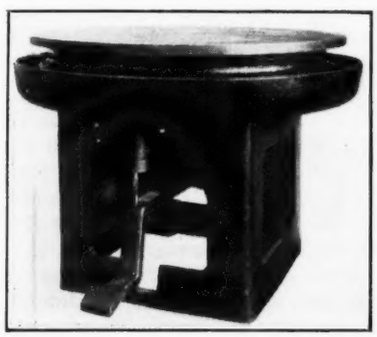
THE L. H. Gilmer Co., Philadelphia, Pa., manufacturer of fan belts and woven products, has added a new radiator hose to its line. This hose has a tough rubber lining and is reinforced with three plies of woven fabric. It is manufactured in standard sizes from ¾ in. to 3 in. Each 3-ft. length is branded with the size and is marked off in inches to facilitate cut-

Parts, Accessories and Production Tools

ting. The hose is packed in cartons containing six 3-ft. lengths. The manufacturers claim for this new radiator hose that it is so constructed that it resists to a remarkable degree the action of hot and cold water, as well as oil and anti-freeze solutions.

Indexing Table for Drilling

AN indexing table for use with single-spindle drilling machines so that a group of operations may be performed with but a single set-up is a recent addition to the line of machine tools produced by Hoeffer Mfg. Co., Freeport, Ill. This indexing table consists of a large square base which permits the unit to be bolted to any driller, a sub-base which contains the pedal-operated, index locking-plunger, and the indexing table proper.

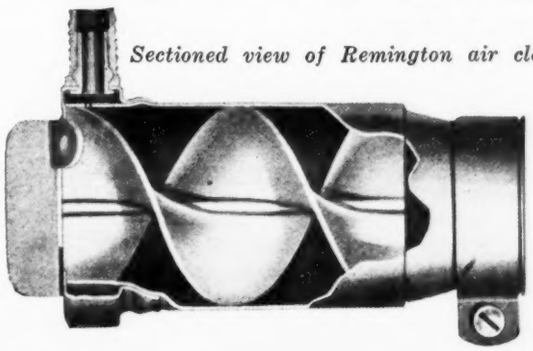


Hoeffer indexing table

The index locking-plunger is hardened with the taper end ground and entering hardened and ground bushings. The number of bushings varies with the number of stations required by the work. They are accurately spaced around the under side of the table to insure correct registration of the table in all positions. The indexing table is a plain flat finished piece to which most any sort of fixture may be attached. The table is carried on a large central locating stud and is held down by a collar on the lower end of the stud, thus permitting wear adjustment. The table rests on roller bearings spaced around the top of the sub-base.

Remington Air Cleaner

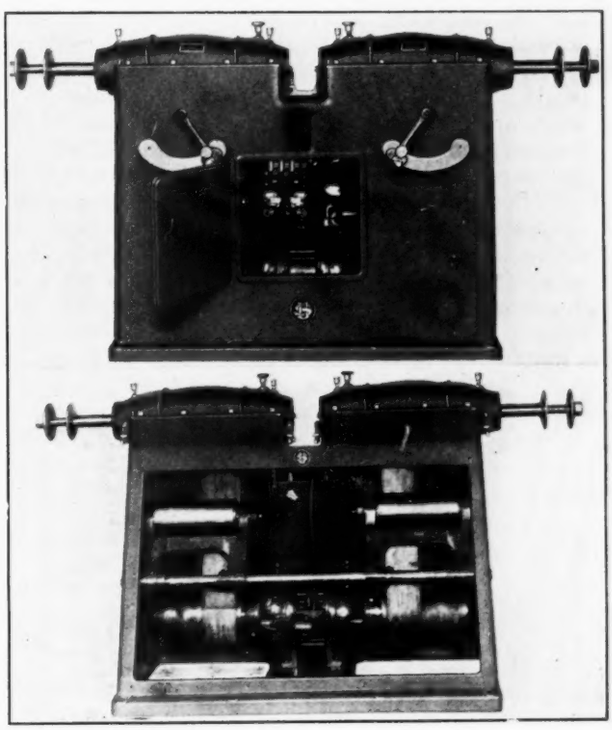
AN air cleaner combining the centrifugal-separation and the oil-covered-surface principles has been placed on the market by the Rectifier Mfg. Co., Chicago, under the name of the Remington. It consists of a cylindrical shell containing a helix of comparatively long pitch. The cleaner is secured to the air inlet of the carburetor by means of a clamp similar to a hose clamp. Near its outer end the cylindrical chamber is surrounded with a sheet metal jacket which communicates with the crankcase through a flexible tube. Through this tube any fuel and water vapor in the crankcase is drawn back into the engine cylinders, and oil vapors are also carried along and are deposited on the interior walls of the cleaner, the jacket communicating with the interior of the cleaner through small holes. Owing to the helical motion of the inrushing current of air, any dust particles in the air are thrown against the outer wall and are held by the oily surface. The device can be cleaned by removing the helix and washing or rinsing it in gasoline. An incidental advantage claimed is that some of the oil passes through the carburetor into the engine and lubricates the valve stems.



Sectioned view of Remington air cleaner

Selective-Speed Buffers and Polishers

A NEW line of selective-speed buffing and polishing machines has been announced by the United States Electrical Tool Co., Cincinnati, Ohio. Two speeds, of 2250 and 2750 r.p.m. respectively, are obtained from a motor in the base through belt drive to the spindle. By shifting the belt from the driving to the idle pulley, by means of the control levers at the front of the machine, either spindle can be stopped independently of the other. Belt tension is automatically regulated by means of the steel roller seen in the rear view. Among the features of construction may be mentioned the use of ball bearings, chrome-nickel steel spindles and automatic push-button control. These buffers and polishers are made in five sizes, with 3, 5, 7½, 10 and 15 hp. motors respectively.



U. S. selective speed, motor-in-the-base buffer and polisher, front and rear views, with covers removed

Pump on Dashboard Operates *Utility* Chassis *Lubricating* System

Predetermined quantity of heavy oil delivered to various points of chassis through individual measuring valves. Oil forced into bearings under a pressure of 200 lb. p. sq. in.

A NEW chassis lubricating development, known as the Hill "Utility" Centralized Chassis Lubricating System, has been announced by the Hill Products Corp., 4600 Schubert Ave., Chicago, Ill. With this system, by pulling on the plunger of a pump mounted on the dashboard, the driver delivers a predetermined quantity of heavy oil to the various bearings on the chassis, through individual measuring valves located close to these bearings.

The plunger pump, mounted on the dash, draws oil from a reservoir on the engine side of the dash. The measuring valves, located adjacent to the bearings to be lubricated, are made with different capacities, hence the different bearings can be supplied with lubricant in proportion to their needs, although the same stroke of the plunger lubricates all.

Oil is delivered to a trunk line on each side of the chassis, and from these trunk lines branches lead to the measuring valves at the bearings to be lubricated. Each valve constitutes an oil reservoir which is at all times filled, and when the plunger is operated a certain amount of oil is displaced, oil from the reservoir entering the bearing and an equal amount being supplied to the reservoir. The oil is forced into the bearings under a pressure attaining 200 lb. p. sq. in. This pressure is determined mainly by the resistance of the measuring valve, and is made high with the object of equalizing the flow to different bearings in spite of inequality of clearances, etc. If the car manufacturer desires, the pressure can be made greater than that mentioned.

After the plunger of the pump has been pulled out and then released, the pressure is immediately generated, and it is said to be maintained for a sufficient length of time to insure that each bearing will receive an adequate amount of lubricant. Little effort is required to operate the pump.

Each measuring valve contains an inlet and an outlet port, the former being normally closed by a spring-returned ball check valve. The housing below this valve is always filled with oil. When the pump is operated, the resulting high pressure on the check valve moves to the outlet port, forcing about one-half of the oil contained in the chamber into the bearing, while at the same time the space behind the ball valve is filled with an equal amount of new oil.

Flow to the bearing ceases as soon as the valve reaches the outer port, and the valve remains in that position until the pump pressure is relieved. The ball check valve then returns to its normal position on the inlet port. During this operation the new charge of oil is transferred from above to below the valve by leakage. It is stated that in case any bearing should become "tight" or "frozen," it develops a back pressure

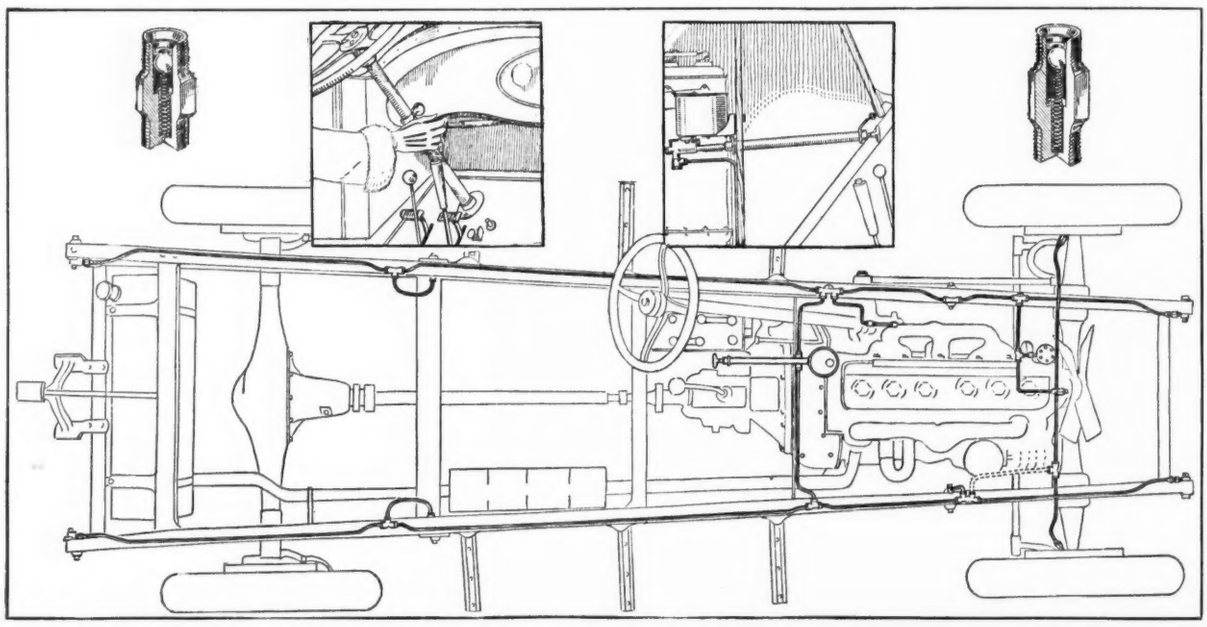


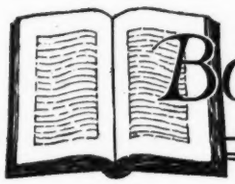
Diagram of Hill "Utility" lubricating system applied to a chassis, together with some details

in the valve housing, which prevents the check valve from reaching the outlet valve to shut off the flow. Consequently, such a bearing continues to receive lubricant up to the completion of the pump stroke, or as long as pressure is maintained on its value.

Between successive operations of the pump there is no displacement of oil either to or from the reservoir of the measuring valve, because the inlet is closed by the check valve and the outlet is so small in diameter that the oil is held in it by capillary attraction.

The Hill system is designed for the use of heavy transmission oils. As a precaution against grit getting into the bearings, each valve is screened, but the delivery openings of the valves are said to be sufficiently large to pass foreign particles of such small size that they can be of no harm to the bearing.

This system of chassis lubrication makes use of the Hill "Utility" ball roll-tube coupling, for which it is claimed that it permits of an unlimited number of disconnections and reconnections without danger of leakage; that it is compact and easily installed and resists loosening through vibration.



Books for the Business Bookshelf

1925 Population Analyzed

Population and Its Distribution (Fourth Edition). J. Walter Thompson Co., New York. 371 pp. Illus.

THIS fourth edition is based upon 1925 estimates of population made by the Census Bureau or upon state census figures where such figures are available. It is divided into five parts. Part 1 contains population figures for states and principal cities for 1925 and 1920. In Part 2 is given state summaries of population by city size groups for 1920, followed by 1925 estimates for cities by size groups and detailed lists of the principal cities grouped according to size.

Part 3 contains state and county figures for Federal income tax returns compared with population and population per tax return for each county in the country. Part 4 contains figures from Part 3 grouped into 679 retail shopping areas showing population and tax returns for the centers and surrounding territories with the number of department stores contained in each. Wholesale and retail distributors in the principal lines of trade are listed by states and by principal cities in Part 5.

Study of Aluminum and Its Alloys

Aluminum—the Metal and Its Alloys. M. G. Corson. D. Van Nostrand Co., New York. 291 pp. Illus. $8.

STARTING out with a description of the properties of aluminum, the author continues with descriptions of 44 members of the binary aluminum alloy series and of the ternary systems. The descriptions contain constructional diagrams of the alloys and data concerning their origin and use. Following this, considerable space is devoted to the technology of aluminum alloys with discussions of foundry practice, methods of utilization of the alloys, etc. Aluminum and corrosion is treated at great length, as is the use of aluminum alloys in engineering work. The final section of the book is devoted to a discussion of the structurography of aluminum and its alloys.

Our Foreign Trade

Caravans of Commerce. Isaac F. Marcosson. Harper & Brothers, New York. 332 pp.

TO any one interested at all in foreign trade this should prove a very readable book. Its major purpose is to relate the story of what the Department of Commerce is doing to promote and develop our export markets. Mr. Marcosson is widely known as a very well-informed writer on foreign, economic and political subjects and with this background he has been able to picture our foreign trade in an exceptionally enlightening manner. His chapters touching our import conditions, with particular reference to foreign control of some of the important commodities for which we are entirely dependent upon other countries, is of especial interest at this time when the future of the rubber market is so uncertain.

Making the Best Use of Tools

Tool Control. Anker L. Christensen. The Ronald Press Co., New York. 134 pp. Illus. $3.50.

EFFECTIVE control of the tools employed in manufacturing processes is an important part of plant management for, unless the proper tools are always available at the time and place where they are needed, the smooth and efficient operation of the production lines may be seriously affected. This book provides a practical manual of means and methods which may be employed to secure effective tool control in any sort of factory.

Subjects treated include tool classification, location and layout of tool cribs, procedure for installation of control, inspection and issuing tools, cost allocation, executive control, etc. The book is based on experience rather than theory and should find favor with many plant executives.

Patent Laws Explained

Patents. Roger Sherman Hoar. The Ronald Press Co., New York. 232 pp. $4.50.

THERE is probably no one subject which is so often the cause of litigation beween and among manufacturing concerns as that of patent rights. No small part of this has been due to the fact that the whole subject has been so shrouded in mystery that relatively few business executives have more than a hazy idea of the fundamentals of patent procedure.

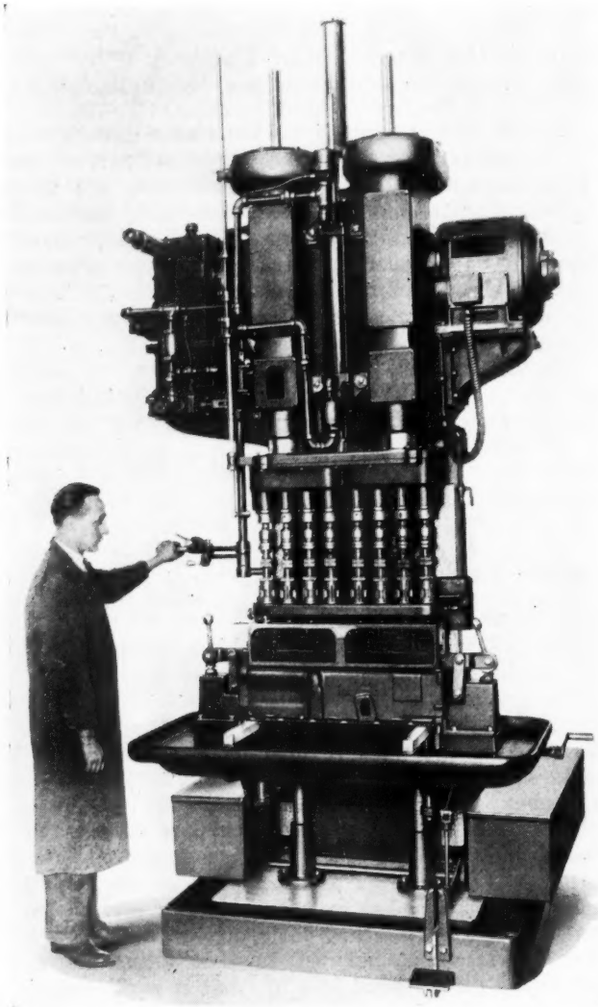
This book is written for the purpose of clearing up that haziness. It is not a treatise on patent law but rather is a treatise on patent tactics, or the procedure which will produce best results under the present patent system. More important parts of the patent law have been translated into business English so that the reader can obtain a very good idea of what it is all about and can more easily understand the work of his patent attorney and can better cooperate with him.

Barnes Cylinder-Honing Machines Hydraulically Operated

Entire head assembly is reciprocated by hydraulic piston and cylinder arrangement. Power furnished by an Oilgear unit driven by electric motor. Table elevating fixture.

AMPLE power for the rotation of the honing heads, hydraulic operation of the reciprocating head, and general rigidity are features of the single and multiple cylinder-honing machines made by the Barnes Drill Co. of Rockford, Ill.

In both types of machine, the entire head assembly is reciprocated by a hydraulic piston and cylinder arrangement. Power for this purpose is furnished by an Oilgear unit which in turn is driven by an electric motor. Ordinarily, the hydraulic control permits the complete withdrawal of the hones, thus facilitating loading and unloading the cylinder block. When the length of the bore is too great, the table is lowered by means of an elevating fixture. The hydraulic unit is controlled by a vertical rod which carries a hand lever at its lower end. Rotation of this rod to various indexed positions brings set stops into play.



Multi-cylinder hydraulic honing machine for finishing six-cylinder block

In the multi-cylinder machine, two vertical spindles of large diameter pilot the honing head assembly, the hydraulic reciprocating cylinder being located between them. These spindles are arranged in quill fashion, to inclose the splined driveshafts, each of which drives half the hones. The electric drive motor and the Oilgear unit are mounted on brackets near the top of the column. For operations on four-cylinder blocks, a 20 hp. motor is recommended with an increase of 5 hp. for six and eight-cylinder blocks. The honing head assemblies are made to order for any specified block and can be interchanged quickly. Immediately adjacent to the Oilgear control hand-lever is placed a push-button electric control switch, so that control of the entire machine is quite handy.

The single spindle honing machine is similar in principle to the large machine. The Oilgear unit is mounted at a lower level. The maximum stroke of both machines is 16 in. so that when hones of 4 in. length are run out ½ in. at each end of the bore, a cylinder of 10 in. length can be accommodated with no special elevating device. For longer cylinder bores, a pneumatic cylinder under the table controls the height of the latter. Kerosene is recommended to be used with any of the recognized makes of hone. The Barnes Drill Co. does not manufacture hones but is prepared to fit standard hones to the machines. In addition to the hydraulic type of machines, a cam-driven machine also is manufactured for operation under fixed conditions.

AIR Corps Information Circular Vol. VI, No. 568, prepared by J. A. Roche of the Engineering Division, Army Air Corps, at McCook Field, entitled, "Study of Dural and Steel for Airplane Structures," contains an interesting summary of the applicability of dural, chromium steel and heat-treated chromium steel for airplane structures. The availability of each of these metals for members in tension, bending and compression is separately discussed. A summary indicates that dural is not desirable for pure tension members or in parts subject to considerable vibration. In other parts, such as bending and compression members, dural shows a decided superiority over steels, whenever geometrical considerations do not prevent the use of the larger dimensioned tubes.

Reasons which remain to induce airplane designers to use chromium steel are that its corrosiveness is definitely known and that it can be welded without loss of strength or necessity for subsequent heat treatment. Heat-treated chromium steel has advantages over non-heat-treated steel for short columns, etc., its advantages being lost, however, if welded into structures too large to enter heat-treating furnaces.

EDITORIAL

Scarcity of Good Salesmen

IT is generally conceded that the task of getting really good salesmen in the retail field is difficult. It is doubtful, however, if all factory men realize exactly how hard it is for a dealer to get really adequate representatives to sell his product. The difference between what might properly be known as a good salesman and a poor one is extremely wide. Figures just compiled by one very large car manufacturer visualize this fact in a striking way.

The figures show that during the past year 3065 salesmen selling this particular car at retail sold only one each in six months of 1926, while 1435 other salesmen sold only two cars each in six months. It showed further that these 4500 individuals sold only as many cars as 200 good salesmen sold.

All of which simply emphasizes the already recognized necessity for carrying on the work of educating dealer salesmen even more intensively in the future than in the past.

Voltage Regulators

AUTOMOTIVE engineers are generally agreed that from a theoretical standpoint at least a system of generator regulation that gives an approach to constant voltage is superior to the third-brush system, the effect of which may be described as output limitation. Constant voltage regulation is easier on the battery than the third-brush system, because it gives a high rate of charge when the battery is nearly empty and can benefit by it, and a low rate when the battery is fully charged, thus obviating overcharging and gassing. It is also beneficial to the lamps, as the lamp voltage will be kept more nearly constant.

But while its results are desirable, voltage regulation cannot be achieved with as simple and inexpensive means as output limitation, and that is the reason it is not used to any extent on passenger cars. Voltage regulators are operated by a coil or solenoid connected across the generator mains, and the maximum current which it would be desirable to use for this purpose would certainly not exceed half an ampere. Now, if it were desired to limit the deviation in voltage from the average to, say, 0.2 volts, the power available for the operation of the control switch would be only one-tenth watt, or a little more than one-ten-thousandth of a horsepower, and it is at once obvious that only a very delicate mechanism could be operated by such exceedingly small power. But delicate mechanisms are apt to give trouble when subject to road shock.

In the case of motor buses the conditions of operation are rather different from those obtaining on passenger cars. The generator output is considerably greater and the injury which can be done by excessive voltage fluctuations to both battery and lamps is a more serious item. All modern buses are brilliantly lighted, and the lamp load is much greater than with passenger cars. Moreover, in mid-winter this load is continuous over a period of many hours, and the generator capacity must be sufficient to carry it. If a generator of such large capacity be allowed to pump current into the battery all day long with the third-brush system of control, not only would there be a great waste of energy, but both the battery and the lamps would be subjected to extra stresses which would appreciably shorten their lives. It is for this reason that voltage control has become practically standard for buses, even though it is more expensive than the third-brush system.

What Price Delivered?

AWHILE back there was a great deal of talk about factories attempting to control the delivered price at which their cars are sold in various parts of the country. Some degree of such control is exercised by a good many factories, but less talk about the general problem has been current recently. Numerous difficulties, both from a dealer's and a manufacturer's standpoint, remain to be ironed out, some of them rather important because they involve practices actually detrimental to constructive selling.

At an important local show this week, for example, a card hanging on the cars exhibited by the local distributor for one prominent maker, says:

F.O.B. factory price	$1600
Plus special equipment—	
Four-wheel hydraulic brakes stoplight, windshield wiper, etc.	$ 185
Total	$1785

On this particular car, four-wheel brakes are standard equipment, as is a stoplight, a windshield wiper and as are several items listed as making up part of the $185 total. Practically any prospect who thought twice would be certain to know that four-wheel brakes were standard on this car and there would appear to be a certainty of subsequent questioning of other items listed and of the accuracy of various other statements made by the dealer or his salesmen. And many of these questionings never will reach the ears of either the dealer or the manufacturer.

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, Pennsylvania

Saturday, January 22, 1927

Plants Hold Schedules Low Pending Sales Development

PHILADELPHIA, Jan. 22—Although the record-breaking attendance at the New York automobile show has been accepted as a favorable augury for the immediate future in motor car sales, it has yet to be shown that interest of this character has any national significance and a majority of the industry's observers prefer to wait upon actual sales developments in the next few weeks.

First quarter production schedules have been laid out on a fairly liberal basis, but are estimated to be somewhat under those of the same period a year ago. Stocks of new cars carried over from last year by dealers are only moderately greater than the 1926 carryover. Drastic curtailment in production of the last two months of 1926 materially improved a situation that looked dangerous for a time.

However, the traditional stocking of dealers at this time of year in preparation for the active selling season is likely to be carried out on a very modest scale by most of the factories, the exceptions being those that are getting into production on new lines or new models.

While conservatively cheerful forecasts of 1927 business are being made by the industry's leaders, the fear is expressed widely that sales in the agricultural districts are likely to prove disappointing.

The public taste is another doubtful quantity. Motor cars are being presented in a variety of types never before equalled, and those manufacturers who have most accurately judged the prevailing demand will benefit to an extent hardly possible when the product was more standardized that it is today.

Coolidge Requests Aid for Industry

WASHINGTON, Jan. 20—Congress has received a budget request from President Coolidge for a $65,000 appropriation which would be used for foreign trade commissioners to aid American automobile manufacturers in their fight to gain and hold foreign markets. Increased American activity is made necessary by increasing foreign competition.

The action is in response to requests from the National Automobile Chamber of Commerce and other organizations for an expansion of the activity of the foreign trade service of the U. S. Department of Commerce.

The communication from the President said that American manufacturers are expending all available resources to retain the foreign markets but that Federal aid is required.

Tax Repeal Ready for Congress Action

WASHINGTON, Jan. 20—Repeal of the 3 per cent excise tax, now collected by the Federal Government on all passenger automobiles sold, will be attempted next week. Notice to this effect was served on the House today by Finis J. Garrett, minority floor leader, who announced the purpose of his party to initiate the move then for action on their $355,000,000 tax reduction bill. Of this sum $75,000,000 relief would accrue to the automobile industry.

The fight must be made on the floor of the House by virtue of the fact that the House Ways and Means Committee on Dec. 16, voted 11 to 9—a strictly party vote—not to report out any tax relief program at this session of Congress.

Under the House rules, after the measure had been voted down by the Ways and Means Committee, the only way it could then be taken up on the floor was by a petition signed by 218 members, constituting a majority. Sufficient signatures have been secured, Minority Leader Garrett declares, and "the fight to be taken to the floor will be prosecuted with more than a fair chance to force the reduction."

Would Dissect Aircraft

WASHINGTON, Jan. 19—What's to become of all the Government's obsolete Liberty engines and other aircraft equipment?

This question would be decided, under the terms of a bill, introduced in the House this week by Representative Kelly of Pennsylvania, authorizing the Secretary of the Navy to dispose of obsolete aeronautical equipment to accredited motor and aviation schools, colleges and universities, for "dissecting" purposes.

Paige 1926 Sales 37,222

DETROIT, Jan. 19—Total shipments of cars by Paige-Detroit Motor Car Co. in 1926 were 37,222, the third best year the company has had.

1926 PRODUCTION SHOWS 128,270 GAIN

WASHINGTON, Jan. 21—Total passenger car and truck production in 1926 was 4,464,541, a gain of 128,270 over 1925, according to figures on United States and Canadian production released this week by the U. S. Department of Commerce. The December passenger car total of 143,413 was the lowest in years and held the year's total output to a slightly lower figure than the earlier National Automobile Chamber of Commerce estimates.

Totals by months follow:

	Cars	Trucks	Total
1925			
Jan.	213,851	28,203	242,054
Feb.	253,955	34,482	288,437
March	334,214	45,180	379,394
April	393,262	47,934	441,246
May	384,548	45,719	430,267
June	366,510	38,151	404,661
July	360,124	41,870	401,994
Aug.	223,517	37,850	261,367
Sept.	274,227	60,482	334,709
Oct.	408,017	46,013	454,030
Nov.	337,435	40,048	377,483
Dec.	286,141	34,488	320,629
Total	3,835,801	500,470	4,336,271
1926			
Jan.	284,703	*33,517	318,220
Feb.	334,524	*41,784	376,308
March	399,105	*49,386	448,491
April	401,836	*54,135	455,971
May	394,569	*51,568	446,137
June	*358,388	*47,265	405,653
July	*329,956	*41,873	371,829
Aug.	*393,056	*47,836	440,892
Sept.	*363,547	*51,257	414,804
Oct.	*300,160	*46,973	347,133
Nov.	226,278	39,410	265,688
Dec.	143,413	30,002	173,415
Total	3,929,535	535,006	4,464,541

* Revised figures

G.M.C. Far East Plant to be Built at Batavia

NEW YORK, Jan. 20—General Motors Corp. will build a central assembly plant at Batavia, Dutch East Indies, to serve retail requirements in that zone. This action follows the refusal by the Singapore municipality of a site for a factory with capacity to build 8000 cars the first year which was sought.

Dodge 1926 Sale 331,764

DETROIT, Jan. 17—Production of Dodge Brothers, Inc., for 1926 totaled 331,764 passenger cars and trucks, which is a new record for the company. The 1926 output exceeded 1925 production by 27.6 per cent when 259,967 units were built.

John Kelsey Dies After Noted Career

Was One of Pioneer Automobile Wheel Specialists; Was D.A.C. Founder

DETROIT, Jan. 19—John Kelsey, president of Kelsey Wheel Co., died at his home here Wednesday evening of stomach trouble. He had had a most successful career and in his passing the automotive industry loses one of its best liked and most outstanding executives.

Born in Detroit, March 15, 1866, he left school when 11 years old and went to work for a paper firm for $1 a week to help support his widowed mother. For six years he labored at odd jobs, succeeded in saving a little, and when 18 years old went in business with Albert V. McClure, under the firm name, Kelsey, McClure & Co., manufacturing hardwood supplies. This venture proved a success and in 1902 he broadened his activities when he and H. J. Heebert organized the Kelsey, Heebert Co. to manufacture ebony toilet articles.

He was one of the men to catch an early vision of the possibilities in the automobile business and in 1906 became interested in a spring automobile wheel. The next year with William Ducharme and six other Detroiters he organized the Kelsey Wheel Co., capitalized at $300,000. By 1915 the capitalization had been increased to $13,000,000. All wheels used by Ford Motor Co. were built by Kelsey at one time but the business was later expanded to provide a variety of wheels for other car manufacturers.

During his 40 years in business Mr. Kelsey accumulated a large personal fortune. Hundreds of his early friends who were less fortunte than he were given employment in his shops and his "private pension list" is said to have included many names.

Mr. Kelsey was an ardent baseball fan and player. Since 1900 he owned a one-third interest in the Detroit American League team and, despite his last illness, the recent baseball scandals are said to have caused him much concern. He was also given most of the credit for organizing the Detroit Athletic Club.

Besides the D. A. C. he was a member of the following clubs: Detroit, Detroit Country, Bloomfield Hills, Grosse Ile Country and Grosse Ile Golf. He was also a member of the Palestine Lodge of Masons.

John Guy Monihan

DETROIT, Jan. 18—Word was received here today that John Guy Monihan, advertising executive and former president of the defunct Harroun Motor Corp., died last night at the home of his mother in East Orange, N. J. He had been ill of Bright's disease.

With the dissolution of the Harroun Company. Mr. Monihan became agent for the Newport News Shipbuilding & Dry Dock Co., but recently has been making his home in New York. Before his affiliation with Harroun, Mr. Monihan was well known in the automotive industry through his connection with other companies.

Autocar President Pneumonia Victim

TRENTON, N. J., Jan. 17—L. L. Woodward, president of the Autocar Co. of Ardmore, Pa., died yesterday at his home here. He was 48 years old and had been ill for less than a week with pneumonia.

Although Mr. Woodward did not actually enter the automotive industry until his election to the presidency of the Autocar company last April, he had for many years previously been closely identified with the motor truck industry because, since 1915, he had been president of Fitz Gibbon & Crisp, Inc., of Trenton, manufacturer of bodies for commercial motor vehicles. Mr. Woodward was born in Lancaster, Pa. He graduated from the Williamson Trade School and moved to Trenton, where, in 1901, he obtained a position with Fitz Gibbon & Crisp. He worked his way up in that organization until for the last 11 years of his life he headed it as president.

M. & A.M.A. Groups to Meet During Chicago Show Week

NEW YORK, Jan. 19—The Motor & Accessory Manufacturers Association will hold a series of group meetings for members only at the Palmer House during the Chicago show.

The plan, as outlined by Neal Adair, under whose department the work is conducted, will consist of meetings of groups of members who distribute products nationally through the wholesale trade and have cooperated throughout 1926 in the work of the sales development department.

The service parts group will meet Feb. 2, at 10 A. M. L. A. Safford of McQuay-Norris Mfg. Co., is chairman.

The shop equipment group will meet the same day and at the same place, at 2 in the afternoon. R. W. Procter of Black & Decker Mfg. Co., will be chairman.

The accessory group will meet Feb. 3, at 10 A. M. W. S. Isherwood of AC Spark Plug Co., will be chairman.

Sets Steel Rate Hearings

WASHINGTON, Jan. 20—In its investigation of the general freight rate structure of the country, the Interstate Commerce Commission this week assigned dates for hearings on the rates charged on iron and steel articles in carloads. The dates assigned were: Detroit, April 25; Chicago, May 12; Pittsburgh, March 16, and Columbus, Ohio, April 19.

Business in Brief

Written exclusively for* AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Jan. 22—Wholesale trade last week was still quiet under the influence of the year-end seasonal recession. Retail business was stimulated somewhat by clearance sales of fall and winter goods. Commodity prices were generally lower, with advances in cotton, wheat, corn and some cotton goods. Last Thursday bond prices rose to a new high for all time, while stock prices moved irregularly throughout the week. Money rates continued to decline.

FREIGHT CAR LOADINGS

Car loadings for the week ended Jan. 1 numbered 740,348, as compared with 772,590 in the preceding week and 741,560 in the corresponding period of 1926. The freight traffic for the first 11 months of 1926 was 5.7 per cent greater than the previous record established in the corresponding period of 1923.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended Jan. 12 were 15.1 per cent smaller than the total for the preceding week, but 1 per cent above that for the corresponding period of 1926.

FISHER'S INDEX

Fisher's index of wholesale commodity prices stood at 145.1 last week, as against 145.9 a week earlier and 147.2 four weeks earlier. The index number of wholesale commodity prices of the Bureau of Labor Statistics was 147.2 for December, as compared with 148.1 for the preceding month and 156.2 for December, 1925.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve Banks declined $196,600,000 during the week ended Jan. 12, with decreases of $143,000,000 in discounts, $2,800,000 in holdings of Government securities and $50,700,000 in open market purchases. Note circulation declined $62,200,000 and deposits $85,500,000 while reserves increased $72,800,000. The reserve ratio rose from 71 to 75.4 per cent.

During the same period, loans of reporting member banks declined $167,000,000, with declines of $146,000,000 in loans secured by stocks and bonds and $27,000,000 in "all other" loans and an increase of $6,000,000 in loans secured by Government obligations. Investments increased $55,000,000, while borrowings from the Federal Reserve Banks decreased $141,000,000 and net demand deposits $29,000,000. Time deposits showed a gain of $20,000,000.

Call loan rates ranged from 4 to 4½ per cent last week, as against 4¼ to 5 per cent in the preceding week. Rates on time loans and commercial paper remained unchanged.

J. W. Packard Gives Million to Lehigh

Money Will Build Engineering Laboratory to be "Finest of Its Kind"

BETHLEHEM, PA., Jan. 17—A gift of $1,000,000 for the erection of an electrical and mechanical engineering laboratory at Lehigh University by James Ward Packard, a graduate of the class of 1884 and originator of the Packard automobile, has been announced by the board of trustees of Lehigh University. Aside from the stipulation that the new laboratory shall be the "finest of its kind," Mr. Packard's gift is unconditional. The new building will be known as the James Ward Packard Laboratory and will house every phase of electrical and mechanical engineering at Lehigh, providing accommodations for about 500 students.

Among outstanding graduates of Lehigh in the automobile industry are Alvan Macauley, president of Packard Motor Car Co.; A. R. Glancy, president of Oakland Motor Car Co., and E. F. Johnston, General Motors Corp.

Received Degree in 1884

Mr. Packard was graduated from Lehigh in 1884 as a mechanical engineer. After graduation he worked in New York for six years as superintendent of the Sawyer-Mann Electric Co.'s incandescent lamp factory. Returning to Warren in 1890 he established the Packard Electric Co. and a subsidiary concern, the New York & Ohio Co., and engaged in the manufacture of incandescent lamps. He was early interested in mechanical traction and brought out in 1899 the first Packard automobile.

In 1903 additional capital, furnished by Detroit financiers, was put in and the company moved to Detroit. Mr. Packard was president of the organization and later chairman of the board of directors, from its organization until 1915.

Mr. Packard has retired from active participation in business but still keeps a keen interest in the various enterprises in which he has been concerned.

Mott Foundation Insures C. S. Mott for $3,000,000

DETROIT, Jan. 17—An insurance policy for $3,000,000 for Charles Stewart Mott, vice-president of General Motors Corp., has been taken out by the Charles Stewart Mott Foundation of Flint through two Detroit insurance companies.

The Mott Foundation was organized recently for charitable and educational purposes and the premium will be paid from the income on securities which Mr. Mott has given the foundation. During his life Mr. Mott will direct the investments and after his death they will be restricted to those prescribed for savings banks.

Mr. Mott is named as president, Elsa B. Mott, his youngest daughter, vice-president, and Roy E. Brownell, Flint attorney, treasurer. Mrs. Aimee Mott Butler, a daughter, and Edward MacCrone are named as other incorporators and trustees.

N.A.G. Buys Protos in German Merger

BERLIN, Jan. 10 (*by mail*)—Another consolidation has taken place in the German automobile industry, the Nationale Automobil Gesellschaft having been joined with Protos Automobile, G.m.b.H. The two concerns are subsidiaries of two of the large German electrical firms, the Allgemeine Electrizitats Gesellschaft and the Siemens-Schuckert Werke. The Nationale Automobil Gesellschaft was started as the Neue Automobil Gesellschaft some 25 years ago, while the Protos company, though not quite as old, had in 1908 achieved distinction through its participation in the New York-Paris race in which its car reached the goal first but was disqualified.

After the Protos passenger cars now going through the works have been completed, manufacturing operations will be transferred from the Protos to the N. A. G. plant, and all cars turned out by the consolidated firm hereafter will be marketed as N.A.G.-Protos cars. For the acquisition of the Protos business, 2,000,000 marks in shares of the Allgemeine Elektrizitats Gesellschaft were issued to the Siemens-Schuckert Werke, which held all of the stock of the Protos company.

Sell Under Joint Plan

All of the German and foreign branches of the Siemens-Schuckert Werke will in future handle the passenger cars and commercial vehicles of the N. A. G. Service stations of the two firms are also to be combined. The N. A. G. already was a member of the Gemeinschaft Deutscher Automobilfabriken (Community of German Automobile Works), a joint sales organization selling N. A. G., Hansa-Lloyd and Brennabor cars. This organization recently liberalized its terms of association and there is nothing in them now preventing sales arrangements being made by the N. A. G. with the various branches of the Siemens-Schuckert Werke.

French Sales Decrease

WASHINGTON, Jan. 17—The last three months of 1926 brought a rapid decrease in automobile sales in France, disappointing those who had been encouraged by unusually brisk domestic sales and record-breaking exports during the first six months of the year, according to an announcement made here this week by the U. S. Department of Commerce.

Fishers to Erect $35,000,000 Building

Will Face General Motors Building in Detroit and Cover Entire Block

DETROIT, Jan. 17—The six Fisher brothers have announced plans for a $35,000,000 office building on Grand Boulevard, opposite General Motors Building. The site of the mammoth project comprises 332,000 sq. ft. The main body of the structure, which will be known as the Fisher Building, will cover the entire block and will be 10 stories in height, with a 25-story tower in the center of the facade facing Grand Boulevard.

The building will be built in three units and work on the first section will be started in the spring. The first unit, which will cost $10,000,000, will occupy the east half of the block facing Grand Boulevard, Second Boulevard and Lothrop Avenue. It will be 10 stories high and will include the 25-story tower and will be finished in 1928. Features of the structure will be a garage for 1000 automobiles and a theatre with 4000 seats besides 50 stores of three floors and a professional unit especially fitted for doctors and dentists.

Fred J. Fisher, president of Fisher & Co., in discussing the new building said: "Our aim is to create the outstanding building in the city and express in its highest character the Fishers' appreciation of what the city of their adoption means to them. The undertaking is also an effort toward the decentralization of the city through the development of an uptown shopping and amusement center."

Mr. Fisher stated that because disinterested authorities as well as modern zoning laws are opposed to the skyscraper of ever-increasing height, the brothers have decided to limit the main body of the building to 10 stories with only the narrow tower in the center mounting higher.

May Use Connecting Tunnel

The structure has been designed by Albert Kahn, Detroit architect, and it is said that the new building may be connected with General Motors Building by means of a tunnel under Grand Boulevard.

General Motors Building was built at a cost of $20,000,000 and contains 1,321,202 sq. ft. of floor space. It is 504 ft. wide and 322 ft. deep and is 16 stories high. Practically all office space is now occupied.

The New Center Development Corp., a subsidiary of Fisher & Co., recently concluded negotiations whereby the land was purchased. Its cost is said to have approximated $5,000,000. The six Fisher brothers are Fred J., Charles T., William A., Lawrence P., Edward F. and Alfred J. Fisher.

Steel Sales Slow; Competition Keen

Strip and Sheet Mills Reported Vieing for Automotive Sheet Business

NEW YORK, Jan. 20—Automotive demand for steel, especially for strip and sheets, continues on the slow uptrend but there is no question that the market for these automotive specialties is decidedly ragged. This condition is explained by the intensive competition among producers none of whom at this stage of the market wants to lose a single opportunity to add tonnage to his order books.

Greatly exaggerated rumors have been in circulation lately with reference to price concessions on full-finished automobile sheets. The market for these is somewhere around 4.15 cents, Pittsburgh or Youngstown, which level represents no greater contraction in price than has been the case in the black sheet market for several weeks. There were rumors in the last week of some sales at below 4 cents, but if these were based on facts, they applied to off-grade material, seconds.

Competition between strip and sheet mills continues to be a standing topic of trade discussion. There will always be a certain demand for full-finished automobile sheets that strip-steel can not replace in many uses. The condition that is far more to the fore than the possibly interchangeable use of two descriptions of steel is the clash between production costs of mills equipped with every mechanical refinement and labor-saving device and those which continue to operate with old equipment.

The strip-steel industry is of relatively recent origin and strip-mills as a class are more modernly equipped than the run of sheet mills. Considerable in the way of lowering production costs has been achieved by progressive sheet-rollers and more is to come. It is not so much a question of strips or sheets as it is of modern mills in either branch of the steel industry.

Pig Iron—More interest is in evidence in pig iron market. Automotive foundries seemingly want to cover their requirements over the first quarter and to provide against a coal-miners' strike.

Aluminum—Supplementary mail information regarding the European aluminum syndicate makes it clear that producers in the Anglo-French-German-Swiss cartel will refrain from competing with one another in the American market and relations with the American producer are likely to continue along unchanged lines. No fresh market developments are to be noted.

Copper—The copper market appears to have turned the corner. Automotive demand for brasses, etc., is broader.

Tin—This metal is marking time.

Lead—The market is quiet but steady. Storage battery manufacturers show more interest, especially in March shipments.

Zinc—Better consuming interest is noted this week.

PLANTS TO RESUME IN FULL IN MONTH

WASHINGTON, Jan. 18—A sharp seasonal decline in employment in the automobile and accessory manufacturing plants of the country is reported to the U. S. Department of Labor in its January telegraphic survey of employment conditions throughout the country. All of the reporting manufacturers indicate that they will be on a full time basis again by the middle or end of February. Employment as a whole shows a considerable decline during December, and during the last 10 days of the month part-time operations were generally in effect in the major industries.

Tire Inventories Show Further Gain

NEW YORK, Jan. 17—Inventories of all classes of tubes and tires showed an increase Dec. 1 over the Nov. 1 total, according to the Rubber Association of America, Inc. Production and shipments showed a sharp decline in November from the October totals. Comparative figures follow:

	Inventory	Production	Shipments
High Pressure Tubes			
Nov. 1926	8,068,230	2,355,665	1,790,429
Oct. "	7,588,923	2,869,433	2,456,252
Nov. 1925	5,309,395	3,430,209	2,798,821
Balloon Tubes			
Nov. 1926	4,384,791	1,283,455	1,243,944
Oct. "	4,358,084	1,786,536	1,649,595
Nov. 1925	Not detailed		
High Pressure Casings			
Nov. 1926	4,003,724	1,694,257	1,399,176
Oct. "	3,750,731	1,916,053	1,560,399
Nov. 1925	3,082,241	1,634,710	1,299,843
Balloon Casings			
Nov. 1926	3,162,512	1,396,292	1,273,562
Oct. "	3,070,060	1,755,646	1,668,051
Nov. 1925	Not detailed		
Fabric Casings			
Nov. 1926	631,703	152,950	127,416
Oct. "	616,768	155,768	179,668
Nov. 1925	458,124	336,895	259,008
Solid and Cushion			
Nov. 1926	155,910	43,619	43,355
Oct. "	156,349	43,796	44,636
Nov. 1925	156,180	46,646	59,959

Rubber Imports Increase 27,000 Tons During 1926

NEW YORK, Jan. 17—Final figures for the year on total importations of crude rubber, compiled by the Rubber Association of America, Inc., show an increase of more than 27,000 long tons over last year notwithstanding the fact that December, 1926, shows a decline when compared with December, 1925. The total for the 12 months ending Dec. 31 is 411,962, as compared with 384,837 for 1925. The total for December, 1926, was 32,903 as compared with 39,519 for December, 1925.

The peak month in the year was March, when 42,677 tons were imported, the next highest month being November with 41,107.

Tire Production Takes Upward Turn

Increase of 10 Per Cent Brings Daily Output Close to 110,000

AKRON, Jan. 19—Automobile tire production in the Akron district is again on an upward trend following a period of curtailment for the past several months. Most of the rubber factories increased tire and tube output about 10 per cent the middle of January, bringing average total production to about 85 per cent of capacity. Total production of automobile casings now is between 105,000 and 110,000 in Akron, against about 95,000 a month ago.

That the first quarter of the year probably will see larger sales of tires than the same period last year is indicated by that fact that manufacturers have placed larger orders for basic raw materials. The recent rise in the crude rubber market to above 40 cents a pound can be traced principally to manufacturers' buying. Support also was given the market at the lower prices prevailing in November and December by the $40,000,000 buying pool of tire and automobile manufacturers recently formed.

Tire manufacturers have entered the fabric and cotton market on a large scale, encouraged by low prices of the commodity and prospects for improvement in the tire business. Some companies, notably Firestone Tire & Rubber Co., have bought cotton ahead for a large part of their requirements in 1927, 1928 and 1929.

Goodyear Tire & Rubber Co. has increased operations here over 10 per cent. Nearly 40,000 casings a day are being turned out, compared with 35,000 in December. A record-breaking business has been done by Goodyear in rubber chains for automobiles. The new balloon tire recently announced has brought in a large volume of new business, according to officials. Many dealers are said to have applied for sales rights.

Firestone is manufacturing nearly 35,000 tires a day. A production of better than 22,000 tires a day is being maintained at the B. F. Goodrich Co. plant, and about 7000 at the Miller Rubber Co. General, Seiberling, Mohawk, India and some of the smaller plants are running more than 85 per cent of capacity.

Cuba Buys More Tires

WASHINGTON, Jan. 17—A substantial increase in the importation of tire casings into Cuba during the first nine months of 1926 was reported here this week by the U. S. Department of Commerce. The value of casings imported during the nine months was $1,509,000, as compared with $1.607,000 for the entire year 1925.

Continental Offers Rebuilding Service

Will Handle Complete Overhaul for Manufacturer, Dealer or Owner

DETROIT, Jan. 17—As a means of rendering more satisfactory service on Continental engines, Continental Motors Corp. has devised a plan whereby engines requiring major overhaul operations may be shipped back to the factory in Detroit or Muskegon, where they will be completely rebuilt for a fixed charge.

Flat rate charges covering all phases of work on all models of Continental engines are contained in the plan which is fully outlined in a book which Continental is making available to any garage operator upon application. In inaugurating the program, Continental states that while there are first class and ideally equipped service stations scattered here and there throughout the United States, field conditions as a whole leave much to be desired.

Provisions are made in pricing to properly compensate different classes of representatives. A garage man or independent service station sending Continental a repair job pays less for it than an individual owner. The vehicle manufacturer who handles his customer's work through the Continental shops will also receive discounts which will permit profitable handling.

It is claimed that prices charged for complete overhauling different models are in most cases the same or perhaps slightly under those which would be charged by local service stations. Another item, however, is crating and freight, the cost of which is fully detailed in the instruction book.

When the engine is received at the factory it is completely dismantled, all parts inspected and necessary new units added to make it as good as a new engine. It is put through a series of tests and is finally approved like a new engine, and is given a coat of spray enamel before being returned.

Graham 1926 Sales 37,463

DETROIT, Jan. 18—Graham Brothers, truck manufacturing division of Dodge Brothers, Inc., last year shipped 37,463 units, a gain of 55.7 per cent over the 24,056 shipped in 1925. A total of 29,830 ¾-ton commercial cars were shipped compared with 26,657 the year before. Graham Brothers also enjoyed an unsual gain in its Canadian business.

Devise Oil Viscosity Test

WASHINGTON, Jan. 18—Quick and accurate methods for determining the effect of temperature changes on lubricating oils have been devised by the Bureau of Standards, it was announced here this week by the U. S. Department of Commerce.

SHOW ADMISSIONS 23,000 MORE THAN 1926

NEW YORK, Jan. 17—Paid admissions at the New York show were 23,000 in excess of last year and over 19,000 more than the best previous year, according to S. A. Miles, show manager of the National Automobile Chamber of Commerce. This record attendance was achieved despite heavy rain on Friday and a blizzard on Saturday which reduced attendance on these days and brought the Saturday attendance lower than some of the best previous Saturdays.

Business produced at the show generally was reported excellent.

Ford Holds Parts to Stations Only

DETROIT, Jan. 20—The Ford Motor Co., whose dealers have been engaged for some time in the general sale of Ford parts at a liberal discount, is experimenting with a new plan in one of its large districts. In the experiment the sale of parts by dealers is being restricted to authorized Ford service stations. The test is taken to indicate that the general distribution plan is not entirely satisfactory.

The recently revealed plan with regard to the reconditioning of 1925 used cars at a cost of $60 and carrying a three-month guarantee is declared an experiment being carried out locally.

Advertise Rebuilt Cars

DETROIT, Jan. 17—In a large display advertisement appearing in the Flint Daily Journal, the Otto P. Graff Motor Sales, leading Ford dealer of Flint, makes public announcement of the Ford Motor Co. rebuilt car plan.

"Ford Rebuilds Used Cars," reads large type across the top of the advertisement, and continues: "The first time an automobile manufacturer has rebuilt and guaranteed cars the same as new, in fact, these cars are just what the Ford Motor Co. says—REBUILT, look like new, run like new, guaranteed the same as new. A new car at a used car price." In conclusion, it reads, "We invite you to call at our salesroom and endeavor to distinguish them from new cars."

Goodyear Adds to Plant

LOS ANGELES, Jan. 17—Immediate additions to the building and equipment of the Los Angeles factory of the Goodyear Tire & Rubber Co., involving expenditures of $500,000, are announced. Paul W. Litchfield, president of the parent company, came to Los Angeles to complete arrangements for the expansion. When the additions are all completed, they will increase production by about 1000 tires per day. The present output is 7000 tires per day.

Commerce-Wabash Now Relay Motors

New Company Names Gillam President; Will Build Both Lines

WABASH, IND., Jan. 19—Relay Motors Corp. has been announced as the name of the new corporation formed by the recent amalgamation of Commerce Motor Truck Co. and Service Motors, Inc. The new corporation will manufacture Commerce and Service trucks and the Relay axle at the plant here.

Officers of the Relay Motors Corp. are W. R. Bassick, chairman of the board; G. L. Gillam, president and general manager; M. A. Holmes, vice-president in charge of sales; Paul Abbott, vice-president, and A. K. Taber, secretary and treasurer. Directors are Mr. Abbott, E. W. and W. R. Bassick, E. S. Evans, M. H. Furlaud, Mr. Gillam and Mr. Holmes.

The combined and augmented capitalization now available will provide for an aggressive merchandising program for both lines. The field and distributor organization will remain intact with all activities centering at Wabash.

Hassler Officers Named

INDIANAPOLIS, Jan. 18—New officers of Hassler Mfg. Co., Inc., are Guy Lemmon, president; Arthur H. Shaft, vice-president and treasurer; Edwin Gibbs, secretary; Fred Asperger, assistant secretary; Velma Henry, assistant treasurer, and J. E. Casey, sales manager. The company will hold a sales convention in the near future at which manufacturing, selling and advertising plans will be presented. Dealers and salesmen from all parts of the United States will attend.

Brazil to Increase Duty

WASHINGTON, Jan. 17—The Brazilian Government has approved increased import duties on automobiles and accessories, effective at a date yet unnamed, it was announced here this week by the U. S. Department of Commerce. The duties on automobiles, omnibuses, trucks, chassis, tires, tubes, motorcycles, bicycles, sidecars and accessories have been increased 20 per cent. The object of the increase is to create a fund for the construction and maintenance of highways.

Offers New Fuel Gage

CHICAGO, Jan. 17—A gasoline gage operating on the hydrostatic principle has been placed on the market by the Rectifier Mfg. Co. As made for installation on cars already in service it is provided with an adjusting screw on the back of the case which, after the tank has been filled, is turned until the indicator shows "full."

D. G. Roos and Associates on Studebaker Engineering Staff

The list of appointees to the engineering staff of the Studebaker Corp. of America, announced last week, was headed by D. G. Roos, who is shown in the right center. Left center is W. S. James, who heads the research department. In the center above is Ralph De Palma, who will be closely allied with the research and experimental departments. In the top row, left to right, are R. J. Kohr and J. A. C. Warner, and in the lower row, from left to right, are S. S. Sparrow, M. A. Thorne and T. S. Sligh, Jr.

Bids for Air Contracts Range From $1.25-$2.57

WASHINGTON, Jan. 20—Extensive competition developed in the bids by American air transport companies for carrying the mails by air between New York and Chicago and Chicago and San Francisco, bids for which were opened this week by Postmaster General New, it was announced by the U. S. Postoffice Department.

The bids ranged from $1.25 to $2.57 per pound for the first 1000 miles. Contracts for the transcontinental line will be let in two sections, west and east of Chicago and an average of 90 miles an hour will be required.

Companies bidding on one or both sections were the Columbia Air Lines Co., New York; Boeing Airplane Co., Seattle; Stout Airways, Inc., Detroit; Colonial Air Transport Co., New York; National Air Transport, Inc., Wilmington, Del., and Western Air Express, Inc., Los Angeles.

Urges Conference Appropriation

WASHINGTON, Jan. 20—President Coolidge, in a letter just sent to the Senate Committee on Foreign Affairs, urges the appropriation of $15,000 to enable the United States to participate in the second Pan-American Conference on Highways to be held at Rio de Janeiro this year. The House has already authorized the appropriation. The measure is being actively supported by the National Automobile Chamber of Commerce and the American Automobile Association.

Italian Export Program Falls Below Expectancy

WASHINGTON, Jan. 17—The Italian program of greatly increased automobile exports undertaken by the industry there has failed, according to advices from the American Trade Commissioner in Rome to the U. S. Department of Commerce.

Average monthly exports have been 2900 to 3000 cars and the average price in 1926 was 20,000 lire, as compared with 22,000 lire in 1925, owing to the greater number of low-priced Fiats exported.

Million Offer Tire Names

CHICAGO, Jan. 17—First prize in the Sears-Roebuck & Co. contest for a tire name was awarded to Hans Simonson, Bismarck, N. D., for the name "Allstate." Prizes totalled $25,000 and were sought by close to 1,000,000 competitors who sent 2,500,000 suggestions in 25 languages. One contestant submitted 4315 names and was not among the first three.

Army to Add 419 Planes in Present Fiscal Year

WASHINGTON, Jan. 17—The Army appropriation bill for the fiscal year beginning July 1 was reported to the House this week. The measure carries a total of $257,925,518, including $20,396,300 for the Air Corps, contemplating a contract authorization of $4,495,000.

The bill as reported provides an increase of not less than $3,383,550 for new planes, of which $975,000 is to be available immediately. The report on the bill shows that on June 30, 1926, the army had 649 war-built planes and 605 standard machines built since the war, or a total of 1254 then on hand. During the current fiscal year only 419 will be added, as against an estimated total loss of 648.

Uphold State Tax on Buses

WASHINGTON, Jan. 18—A Connecticut statute imposing an excise tax of 1 cent a mile upon motor buses operated over state highways in interstate commerce has been held to be constitutional and was held not to be a prohibitive burden upon interstate commerce in a decision handed down by the District Court of Connecticut, according to a report submitted to the U. S. Department of Justice this week.

Grant Tells S.A.E. Sales Viewpoints

Says Use of More Cars Per Family Most Obvious Expansion in 1927

NEW YORK, Jan. 17—The way to sell motor cars, R. H. Grant, general sales manager, Chevrolet Motor Co., said at the Society of Automotive Engineers' annual New York show dinner, is to get the public to talk favorably about your product.

Over 1000 members and guests were present at the banquet at which Mr. Grant was the principal speaker and at which R. H. Hunt, head of the electrical division, General Motors Research Corp., made his first talk as president of the society.

Five things are important in determining how the public is going to talk about your product, Mr. Grant said. These are: The design of the car, the faithfulness with which the producer carries out his production program, the way in which the product is advertised, the selling and service methods used, and the way in which the management reflects its ideas out to the public. Mr. Grant said that if he had $5,000,000 to spend in putting over a new automobile he would expect to spend $2,000,000 in advertising it before he would expect to get public reaction—that is, to get the car talked about in a general way. The use of more cars per family is, to Mr. Grant's mind, the most obvious way in which the automotive industry will expand its market in the next year or so.

Mr. Hunt emphasized the necessity for the engineer to have a broad viewpoint and a general knowledge of all phases of the industry if he is to have an opportunity to grow into an executive position of responsibility and is not to be confined merely to the detailed and routine activities of motor vehicle design and production.

T. J. Litle, Jr., chief engineer, Marmon Motor Car Co., outlined briefly the history of transportation in his remarks as retiring president of the society.

E. P. Warner, assistant secretary of the navy in charge of aviation, presided as toastmaster.

Thompson Adds K.C. Branch

CLEVELAND, Jan. 17—Thompson Products, Inc., is opening this week a branch in Kansas City, in charge of George Magee and under the supervision of N. R. Swarner, district manager. This is the third branch established by Thompson Products in the last two months and one of five now in operation. An eastern branch will be established in February and the final one of the chain will be in Atlanta. All shipments of parts are made f.o.b. from the branches with no warehouse charges.

OLDS TO PROVIDE TOOLS ON TERMS

LANSING, Jan. 17—Olds Motor Works is proceeding with plans for its new service promotion program outlined briefly to eastern dealers at the New York show by T. H. Stambaugh, service manager.

Dealers may obtain special tool equipment required under the promotion plan on credit terms if desired. A special manual has been prepared with details of shop layout and suggestions as to special tools and equipment. A second manual instructs dealers in the art of selling service.

Bendix Adds to Plant; to Build in England

CHICAGO, Jan. 17—The Bendix Brake Co. will complete a large addition to its plant at South Bend by Feb. 1. This will permit of a largely increased production over the present 4000 set daily capacity. The additional capacity has been made necessary by new contracts with car and truck manufacturers, the company declares.

A branch factory will be established in England this spring which will engage in the complete fabrication of Bendix brakes for the British trade.

Peed Finds Early Sales Exceeding Former Years

NEW YORK, Jan. 17—"Sales have started out with greater momentum than has ever marked the start of any year," L. G. Peed, general sales manager of Willys-Overland, Inc., told dealers in Willys-Knight and Whippet cars attending an all-day sales convention at the Roosevelt Hotel.

The meeting was also addressed by John N. Willys, president; O. P. Kilbourn, assistant sales manager; R. M. Rowand, sales promotion manager, and Ward M. Canaday, director of advertising.

Similar meetings will be held successively in all sections of the country.

Has Dealer Accounting System

NEW YORK, Jan. 17—As a means of assisting dealers, the sales division of Willys-Overland, Inc., is installing a complete dealer accounting system.

Expert accountants who have a knowledge of the dealer situation will have charge of the system and will work directly with the dealers.

Approve Wright Engine

WASHINGTON, Jan. 18—A new type of air-cooled airplane engine designed to develop 525 hp. has successfully passed tests by Navy inspectors at the plant of the Wright Aeronautical Corp., Paterson, N. J., it was announced by the Navy Department.

New Interests Buy Shaler Business

Form New Corporation Which Also Takes Over Bauer Lock Firm

MILWAUKEE, Jan. 17—Milwaukee interests have acquired the entire business of the C. A. Shaler Co., Waupun, Wis., manufacturing vulcanizers and vulcanizing equipment for shops. The purchasers are Phillip H. Dorr, A. W. Fairchild, William Fleming and others. The transaction is reported to involve more than $1,000,000.

A new corporation, titled the Shaler Co., has been formed under the laws of Delaware to take over and operate the business. Its capital consists of 50,000 shares of Class A and 130,000 shares of Class B stock, all without par value.

Mr. Dorr is president of the Kinite Co., Milwaukee, manufacturer of tool and special steels. Mr. Fairchild is a leading attorney of Milwaukee, and Mr. Fleming, formerly of Pittsburgh, is secretary-treasurer of the Kinite Co., and has been associated with the A. O. Smith Corp., manufacturer of pressed steel frames and forgings. The active management for the present remains in the hands of men who have built up the business.

It also is announced that the new owners of the Shaler company have acquired a 100 per cent interest in the Bauer Lock Co., an Illinois concern making locks and steering wheels. This will be operated as the Shaler Lock Co. of Illinois, but all of its capital will be owned by the Shaler company.

Fedders to Exchange Stock

BUFFALO, Jan. 18—Papers filed with the county clerk here indicate that the capital stock structure of the Fedders Mfg. Co., producer of radiators and other automotive equipment, is to be revised.

It is proposed to exchange the outstanding 10,000 shares of $100 par value stock for 100,000 shares of no-par value stock on a basis of 10 shares of the new for one $100 share of the old.

By this exchange, five shares of Class A stock and five shares of Class B stock would be issued. The Class A stock would call for a quarterly dividend of 50 cents a share, or $2 annually. After this shall have been paid, the Class B stock would then be entitled to participate in any remaining profits.

James A. Auld

COLUMBUS, Jan. 17—James Albert Auld, vice-president of the D. L. Auld Co., manufacturer of metal stampings for automobiles and a line of accessories, died at his residence last week. He survived his father, D. L. Auld, founder of the company, about six months. J. A. Auld had been associated with the company 30 years.

G.M.C. 1926 Sales Grow to 1,234,850

Factory Shipments Within 19,024 of Retail Sales—Dealer Stocks Cut

NEW YORK, Jan. 17—Sales by General Motors Corp. car divisions to dealers in 1926 totalled 1,234,850 as against retail sales by dealers of 1,215,826, an excess of 19,024. Sales by divisions in 1925 totalled 835,902 and retail sales 827,056, an excess of 8846. Sales by divisions in December were 44,130 and retail sales 52,729. These compare with 54,117 and 56,129 respectively, in December, 1925.

The decrease in December business is ascribed by A. P. Sloan, Jr., president, to the retail drive by one division in November. This drive brought November retail 70 per cent in excess of November, 1925, but many sales were closed in that month that normally would have been made in December, he said. Combining the last two months, retail business showed a gain of about 32 per cent, Mr. Sloan said, which, he added, was the general trend of the last few months.

"Dealer stocks have been reduced during the past 60 days by approximately 30,000 cars and at the close of the year stood in very favorable relationship with the current trend of retail sales," Mr. Sloan declared.

Complete sales figures for 1926 and 1925 follow:

	Dealers' Sales		Divisions' Sales	
	1926	1925	1926	1925
Jan.	53,698	25,593	76,332	30,642
Feb.	64,971	39,579	91,313	49,146
Mar.	106,051	70,594	113,341	75,527
Apr.	136,643	97,242	122,742	85,583
May	141,651	87,488	120,979	77,223
June	117,176	75,864	111,380	71,088
July	101,576	65,872	87,643	57,358
Aug.	122,305	78,638	134,231	76,462
Sept.	118,224	83,519	138,360	89,018
Oct.	99,073	86,281	115,849	96,364
Nov.	101,729	60,257	78,550	73,374
Dec.	52,729	56,129	44,130	54,117
	1,215,826	827,056	1,234,850	835,902

Conditions Made to Order on Coast, Says Steenstrup

SAN FRANCISCO, Jan. 17—Automotive merchandising conditions for the new year from Seattle to San Diego are "as perfect as if made to order," and far better than they were at the opening of either 1925 or 1926, according to Peter S. Steenstrup, district representative of the Buick Motor Co.

"Indications are for greater sales records than were hung up in 1926," Mr. Steenstrup said. "I have interviewed bankers, ranchers, merchants, automobile dealers, professional men and workers in all industries, and I have yet to find one dissenting view as to the general prosperity and the great purchasing ability of this 'white spot' on the business map."

G.M.C. SALES RANGE 4.2 TO 16 PER CENT

NEW YORK, Jan. 17—An analysis of retail deliveries of new cars by General Motors Corp. dealers in 1926, show April the highest sales month with 16 per cent and January lowest with 4.2 per cent. The range throughout all months of the year was as follows:

Month	Per Cent	Month	Per Cent
Jan.	4.2	July	8.3
Feb.	5.0	Aug.	8.0
Mch.	10.2	Sept.	8.1
Apr.	16.0	Oct.	8.0
May	11.3	Nov.	5.9
June	9.5	Dec.	5.5

Wisconsin Sales Gain 22% in 1926

MILWAUKEE, Jan. 17—Sales of new passenger cars in Wisconsin in 1926 were 98,656, compared with 80,895 during 1925, official figures reveal. This is an increase of approximately 22 per cent.

Sales of new Fords in Wisconsin during 1926 numbered 35,857, against 34,047 during 1925. Chevrolet sales were 16,131, against 10,188 in 1925. Buick sold 7015 cars in Wisconsin in 1926, against 4990 in 1925.

The opening of Milwaukee's twentieth annual show Saturday found distributors and dealers confident of equalling 1926 sales. The 1926 gain of 22 per cent over 1925 was larger than predictions made a year ago contemplated, despite the fact that Ford made but a very slight gain for the year.

New York and New Jersey Gain

NEW YORK, Jan. 17—Total registrations for the Metropolitan area in 1926 were 122,002 as compared with 100,968 for 1925, according to final tabulations by Sherlock & Arnold.

Total registrations of all cars in New Jersey in 1926 were 104,254, comparing with 84,616 in 1925.

Judd & Leland to Expand

ROCHESTER, Jan. 17—Judd & Leland Mfg. Co. has inaugurated a program of expansion which calls for reorganization of its financial department and increasing the capitalization from $75,000 to $125,000 to meet new merchandising conditions and care for steadily growing demands. The company manufactures automobile tire pumps and spraying pumps used in applying paint.

Study Plywood Crating

WASHINGTON, Jan. 17—Development of a plywood crating specification for the packing of automobiles for export is being studied by the National Lumber Manufacturers Association and the National Automobile Chamber of Commerce.

20% Gain Sought by Ford of Canada

Plans Are Made for Increase in 1927—Shows 38% Gain in 1926

DETROIT, Jan. 17—With the announcement by W. R. Campbell, vice-president and treasurer of the Ford Motor Co. of Canada, Ltd., that his company intends to increase production 20 per cent during 1927, the prospect for an excellent year for motor car sales in the Dominion is forecast. During 1926 the Ford company of Canada enjoyed a 38 per cent increase in sales over 1925, Mr. Campbell said.

Industrial activity is great in Ontario and Quebec and a general improvement in conditions is obvious, he declared. The Prairies, from the Lakes to the Rockies, reflect the benefits of a crop which, though not as large as that of 1925, commanded better prices and was, therefore, of greater advantage to the country. He also said that every industry in British Columbia is thriving. Canada's foreign trade last year aggregated $2,309,000,000 and showed a favorable trade balance of $300,000,000. Bank clearings were listed at $17,583,000,000.

Describes Industry's Prominence

The automobile industry is now practically the largest in the Dominion and Canada today probably stands second among the countries as a producer of motor cars, Mr. Campbell said. Canadian production in 1926 aggregated 200,000 units and registrations mounted to 850,000 vehicles. Mr. Campbell expressed the belief that 1927 will see registrations exceed the million mark.

Ford gains by provinces were:

Maritimes, 19 per cent; Quebec, 7 per cent; Ontario, 31 per cent; Manitoba, 41 per cent; Saskatchewan, 85 per cent; Alberta, 74 per cent, and British Columbia, 31 per cent, or an average of 38 per cent.

Bay State Car Gains 8%; Revenues Increase 35%

BOSTON, Jan. 17—Officials of the various motor organizations in Massachusetts digesting the registration figures for 1926 showing that while vehicles jumped about 8 per cent the revenue increased about 35 per cent or from $9,268,654 in 1925 to more than $13,000,000 including fines in the last year, are now ready to fight any more increases at the expense of the motorists.

Dealers increased by 123 over a year ago. Rather amazing figures are those showing that 34,149 out of the 153,053 who sought licenses to drive were turned down last year, or approximately about as many as the year before. This is evidence that Massachusetts is strict in giving out licenses.

Men of the Industry and What They Are Doing

Get Off the Calf-Paths, Moskovics Urges Dealers

F. E. Moskovics addressed the Detroit Automobile Dealers Association this week on automobile retail salesmanship. The most serious handicap automobile salesmen face is the frequent floor day by which they are held from applying their ability and personality upon persons whom they have selected as most likely to buy. Sitting in a salesroom and waiting for a prospect is the job of a five-and-ten store clerk, Mr. Moskovics said.

The automobile business is the best branch of the best, fastest-moving, quickest-developing, most useful business in the world—the branch that gives the most opportunity for intellectual and material advancement. It requires, Mr. Moskovics said, only the direct application of some of the simplest forms of right thinking.

The price of success in this business, said Mr. Moskovics, is like the price of anything of its value—it is high but the returns from this success are also high. He urged dealers and salesmen to get away from the "calf-paths of the past" and develop originality of thought and of endeavor.

Wheeler Meets Paige Dealers

W. A. Wheeler, new president of the Paige-Detroit Motor Car Co., was introduced to eastern dealers at a New York show dinner by H. M. Jewett, retiring president who is now chairman of the board.

Henry Krohn, vice-president, declared that Paige would introduce no new models between now and Aug. 10.

C. B. Gaunt, sales manager, announced a new course for salesmen, which will be given by mail and will also be presented by direct instruction in New York.

D. A. Andrews Promoted

D. A. Andrews has been appointed assistant sales manager of the Continental Motors Corp. For the past 15 years he has been associated with Continental as service manager, a position he will continue to retain in an advisory capacity in addition to his new duties.

Daly on Mediterranean Trip

C. F. Daly, vice-president Durant Motors, Inc., sailed this week for a three or four months' tour of Mediterranean countries, including Egypt, Algiers, western Asia Minor and southern Europe. He will be accompanied by his family. He will study motor car markets and export conditions.

King Adds Representatives

Appointment of three additional representatives to cover newly created territories has been announced by Burt G. Close, general sales manager of the King Mfg. Co. The assignments are as follows: W. C. Moore, New York territory; Neil M. Baker, New England, and H. C. Goodrich, Chicago, Indiana and eastern Michigan.

Adams Aids Sales Head

Floyd Adams has been promoted to the position of assistant general sales manager of Biflex Products Co. In addition to his new duties Mr. Adams will continue to direct the Detroit branch of the company where he will also make his headquarters. It was erroneously reported previously that Mr. Adams had been made assistant general manager.

Tipper on Southern Trip

Harry E. Tipper, general sales manager of General Motors Export Co., has sailed on the Southern Cross for a visit to General Motors assembling plants in South America. He will visit Uruguay, the Argentine, Brazil and Chili and will be gone about three months.

Eaton Promotes Officers

Eaton Axle & Spring Co. has appointed H. D. Mixer assistant sales manager of the axle division, and B. M. Burns service manager of this division. Mr. Mixer has been with the Eaton organization for 11 years and Mr. Burns for eight years.

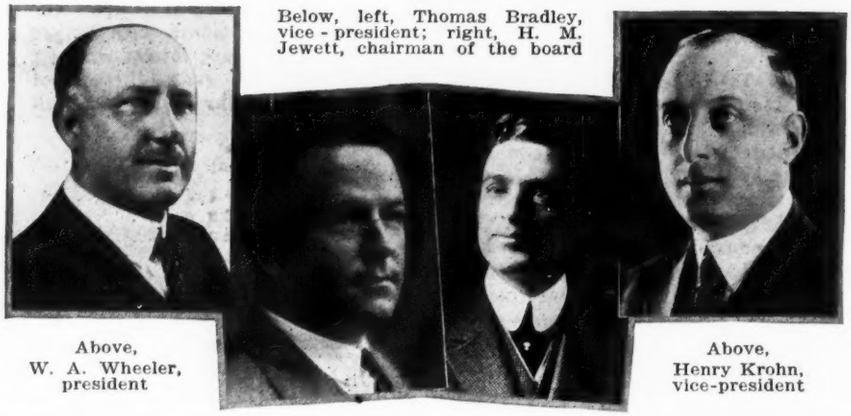
Lockwood Joins Moon

J. H. Lockwood, former representative in the United States and abroad for Locomobile and later with Wills Ste. Claire, has been appointed district sales and service representative for the Manhattan Moon Co., Inc.

Gabelman Sales Head

Herman H. Gabelman, formerly general manager and vice-president of the Bunny Supply Co., Miami, Fla., has joined the Kingsley-Miller Co., Chicago, as sales manager. Mr. Gabelman's wide experience qualifies him for the greater responsibility of his new position.

New Officers of Paige-Detroit Motor Car Co.



Above, W. A. Wheeler, president

Below, left, Thomas Bradley, vice-president; right, H. M. Jewett, chairman of the board

Above, Henry Krohn, vice-president

W. R. Tracy is Appointed Oakland Vice-President

The election of W. R. Tracy as vice-president in charge of sales of the Oakland Motor Car Co., has been announced by President A. R. Glancy. Mr. Tracy's election as vice-president follows close upon his appointment several weeks ago as general sales manager. Mr. Tracy joined Oakland in 1911 and has been with the company continuously ever since, working his way up from a salesman.

Falcon Names Zone Heads

B. F. Page has been appointed eastern zone manager, and George DeGroat has been made zone manager for western Pennsylvania, Ohio, Michigan, Indiana, Kentucky and West Virginia, by Falcon Motors Corp. Mr. Page was formerly with Chrysler Corp. and Mr. DeGroat was with Dodge Brothers, Inc.

Gove Named Sales Head

N. C. Gove has been appointed sales manager of the L. C. Smith Bearings Co., Chicago. Mr. Gove has been connected with the company for the past three years and is widely known in the trade.

Green Heads Paige Branch

Rollan A. Green has been named manager of the New England branch of the Paige-Detroit Motor Co. He has been assistant manager in the Boston office for many years.

Canada Dealers Organize

OTTAWA, Jan. 10—Largely through the energetic efforts of J. R. Dixon of Ottawa, Canadian dealers are being banded into one strong country-wide organization. Many members have already been secured in western Canada as well as in the eastern section and are rallying to the program of the association. Mr. Dixon is well known to Canadian dealers through his handling of the luxury tax case.

Instalment Sales to Retain Volume

Finance Officers See Favorable Change in Attitude of Buying Public

CHICAGO, Jan. 17—The change in public opinion toward instalment buying, leading to its general acceptance as sound, is the most important gain of of the year 1926, officials of the National Association of Finance Companies say in a statement issued this week. There will be no important change in the volume of consumer credit in 1927, the statement says.

The change in public attitude of the past year has been brought about by scientific study by leading authorities and pronouncements of public officials based upon these studies.

G.M.A.C. Doubles Business

NEW YORK, Jan. 17—C. C. Cooper, president of General Motors Acceptance Corp., in a statement this week says the volume of G.M.A.C. business in 1926 more than doubled 1925, this, he said, being due to the largely increased business of General Motors dealers rather than to an increased percentage of instalment sales.

The tendency is toward greater conservatism in credit terms, Mr. Cooper said. This is due to two factors, first that the buyer realizes that easy terms involve greater cost, and second, that dealers fear competition on credit.

Finds Instalment Sales Sound

WASHINGTON, Jan. 17—The instalment plan of selling automobiles is declared to be a sound business policy in a statement issued this week by the automotive division of the U. S. Department of Commerce.

The division finds the industry in a condition of stability and finds indications that 1927 will be a prosperous year. It finds nothing alarming in the 5 per cent production increase in 1926 and states there is no evidence of overproduction or overstocking as a rule.

700 Dealers See Falcon, Many Ask for Franchise

DETROIT, Jan. 15—According to John A. Nichols, Jr., president of Falcon Motors Corp., more than 700 dealers viewed the initial showing of the Falcon-Knight which was held during the New York automobile show. Headquarters of the corporation were crowded with dealers who obtained first-hand information on the new company, its policies and its products, and many applications for franchises were received. Besides the private showing many were taken for a ride in a demonstrator which was on the streets of New York.

"All week we were interviewed by many dealer applicants from practically every important city in the eastern states," said Mr. Nichols. "Our zone managers will now call on interested dealers in their respective cities and the selection of Falcon-Knight dealers will be made during the next two months."

Meetings and Events Scheduled for Week of Chicago National Show

NATIONAL SHOW AT CHICAGO
JAN. 29-FEB. 5, COLISEUM

Opens Saturday, Jan. 29... 2.00 P. M.
Show closed Sunday, Jan. 30.
Shop Equipment Section open daily to trade exclusively from 10.00 A. M. to 3.00 P. M.
Trade Days—Monday, Jan. 31 and Tuesday, Feb. 1. Show open to trade exclusively between 10 A. M. and 1.00 P. M.

THURSDAY, JAN. 27

Chicago Automobile Trade Association, Pre-Show Meeting and Banquet, Congress ..... 6.30 P. M.

SATURDAY, JAN. 29

Annual Chicago Salon, continuing through Feb. 5, Drake.
Elcar Motor Company, first of series of daily Sales Meetings, Palmer House....Morning
Hupp Motor Car Corp., first of Daily Luncheons, Blackstone ..... 1.00 P. M.
Rickenbacker Motor Co., first of daily Dealer Meetings, Blackstone .....Morning

MONDAY, JAN. 31

National Automobile Dealers Association, Annual Meeting Board of Directors, La Salle .....10.00 A. M.

TUESDAY, FEB. 1

Moon Motor Car Company, Banquet, Congress ..... 1.00 P. M.
National Automobile Chamber of Commerce, Service Meeting.
National Automobile Dealers Association, Annual Convention, La Salle..... 1.30 P. M.
Oakland Motor Car Company, Luncheon, Palmer House .....Noon
Packard Motor Car Company, All-Day Zone Meeting for Dealers and Distributors, Blackstone.

WEDNESDAY, FEB. 2

Auburn Automobile Company, Luncheon and Meeting, Blackstone .....Noon
National Automobile Dealers Association, Convention, La Salle .....10.00 A. M.
Banquet and Trade Frolic, La Salle ..... 6.30 P. M.
Olds Motor Works, Dealers' Business Meeting, at Chicago Branch ..... 2.00 P. M.
Western Dealers' Dinner, Congress .....Evening
Packard Motor Car Company, All-Day Zone Meeting for Dealers and Distributors, Blackstone.
Velie Motors Corp., Luncheon, Congress ..... 1.00 P. M.
Franklin Automobile Co., Dealer Luncheon, Drake 1.00 P. M.

THURSDAY, FEB. 3

Nash Sales Co., Luncheon for Dealers of Indiana, Iowa and Illinois, Congress .....Noon
National Automobile Chamber of Commerce, National Automobile Dealers Association and Motor and Accessory Manufacturers Association — Joint Service and Shop Equipment Program, La Salle .....10.00 A. M.
National Association of Automobile Show and Association Managers, Meeting, Drake ..... 1.00 P. M.
Paige-Detroit Motor Car Co., Luncheon, Blackstone.....Noon
Studebaker Corp., Dealers' Banquet, Congress ..... 6.30 P. M.

FRIDAY, FEB. 4

Chevrolet Motor Co., Dealers' Meeting, Erlanger Theater ..... 2.00 P. M.
Banquet, Palmer House ... 7.00 P. M.

Leather Upholstery Use Shows Decline from 1923

WASHINGTON, Jan. 20—Manufacturers of upholstery leather, 69 per cent of which is used by the automobile and body building industries, did a gross business in 1925 of $462,013,572, according to biennial census of that industry, just announced by the U. S. Department of Commerce. The 1925 production represents a decrease of 5 per cent from the 1923 figure.

The census shows that there were 532 establishments operating during 1925, of which 118 were in Massachusetts, compared with 597 leather upholstery manufacturers in 1923.

ACF Shows Motor Boats

NEW YORK, Jan. 18—A show room and general sales department for the marine products of American Car & Foundry Co. will be established at 217 W. 57th St. In addition to its regular line of motor cruisers and Hall Scott marine engines, American Car & Foundry will act as distributor for the Belle Aisle, a runabout motor boat manufactured in Detroit and equipped with Hall Scott engine.

Financial Notes

Tyree Auto Radiator Co. paid a 4 per cent cash dividend on outstanding stock and also a 20 per cent stock dividend, representing a cash disbursement of $8000 and $40,000 in stock. The directors also voted to offer $200,000 additional stock following the recent authorization of a stock increase, to provide capital for expansions and secure material and supplies for increased business. It is expected that the new stock will be entirely absorbed by the present stockholders.

Fisk Rubber Co. stockholders will be asked to ratify a reduction of the capital stock by $1,036,800 at the annual meeting Jan. 26. The reduction would be effected by the cancellation of 10,336 shares of first preferred stock required pursuant to the company's articles of incorporation, and 32 shares of the first preferred convertible stock held in the treasury. Only holders of common stock and management stock are entitled to vote at the meeting.

Show Aids Elcar Business

NEW YORK, Jan. 17—Fourteen new accounts were closed by Elcar Motor Co. of Elkhart, Ind., during show week, according to R. A. Rawson, sales manager. Mr. Rawson said that orders were taken for 66 new Elcars on one day of the show, and that 460 inquiries had been received from dealers in the last ten days.

N. A. D. A. Offices Moved to Chicago

CHICAGO, Jan. 17—Effective Jan. 25, the headquarters of the National Automobile Dealers Association will be located at 35th St. and Michigan Boulevard, Chicago. C. A. Vane, general manager of the association, and his entire office staff, will move to the new location from the present headquarters in St. Louis, where the association has been located since its organization.

The move is made because of the more central location of the new headquarters and is in line with the efforts of the association management to give members an efficient administration of their constantly expanding interests.

New Tire Fabric Mills Nearing Operating Stage

ATLANTA, Jan. 17—The initial unit of the $3,000,000 plant at Thomaston, Ga., of the Martha Mills for the manufacture of automobile tire fabric has been completed. The new plant is to manufacture cord tire fabric exclusively for the B. F. Goodrich Rubber Co. and will operate on both a day and night basis.

Another big project of this nature on which construction recently began at Albany-Decatur, Ala., is that of the Connecticut Mills Co., which is establishing a plant there.

Set Machine Tool Show

NEW HAVEN, CONN., Jan. 17—The seventh annual New Haven Machine Tool Exhibition will be held Sept. 6 to 9 at the Mason Laboratory, Sheffield Scientific School, Yale University, with technical sessions in Dunham Laboratory. Harry R. Westcott is chairman of the exhibition committee.

Road Show Sets Record

CHICAGO, Jan. 17—Exhibits of trucks and tractors and special truck bodies and equipment, with industrial engines and other products of the automotive industry, had prominent place at the annual Good Roads Show just held at the Coliseum here.

Attendance at the show was in excess of former marks, many visitors from foreign countries being included.

Coming Feature Issues of Chilton Class Journal Publications

Jan. 27—Motor Age—Chicago Show Issue.

Feb. 19—Automotive Industries —9th Annual Statistical Issue.

Northern California SAE Hears Lubrication Talks

SAN FRANCISCO, Jan. 17—The Northern California Section of the Society of Automotive Engineers met at its monthly banquet and meeting in the Engineers' Club Jan. 13.

Jack Handy, lubricating engineer for the Standard Oil Co., spoke on "Lubrication of Internal Combustion Engines." J. P. French, physicist and chemist for the Richfield Oil Co., discussed "Standards of Motor Lubrication." Davis Day, refining engineer for the Richfield Oil Co. gave the results of experiments defining "The Best Gasoline and Non-Detonating Fuel." Walter Brunn, supervisor of automobile sales of the Associated Oil Company, and Sam Wagner, Pacific coast representative of the Ethyl Gas Corporation, discussed "Ethyl Gasoline."

French Goodyear Changes

PARIS, Jan. 2 (*by mail*) — The French Goodyear Tire Co. went into voluntary liquidation at the end of December and is being replaced by a new company under the title "Pneumatiques Societe Anonyme," with a capital of 300,000 francs, which has obtained the exclusive concession for the sale of the Goodyear Tire & Rubber Co. products in France. The directors are Charles G. Jerosch, who was in charge of the original company, and Messrs. Rapin, Erne and Wulff.

Milwaukee SAE to Meet

MILWAUKEE, Jan. 17—The Milwaukee Section of the Society of Automotive Engineers will hear R. E. Wilson, of the research laboratory of the Standard Oil Co. at a meeting Feb. 2. Mr. Wilson will talk on the "Mechanics of Lubrication."

Italian Motor Club Now Mussolini Aide

ROME, Jan. 10 (*by mail*)—Under the new political regime the Automobile Club of Italy seems to be destined to play a very important role in the development of motoring in that country. Up to about a year ago the club had its headquarters at Milan, but at the express wish of Premier Mussolini these were transferred to Rome because he planned to make it a government auxiliary. At the same time the removal took place a decree was issued making it compulsory for all automobile owners in Italy to become members.

The powers and responsibilities of the club have now been greatly enlarged, as a decree has just been issued under which the club is to maintain a register in which all sales of automobiles throughout the whole country and, in fact, all financial transactions involving automobiles, are to be entered. One of the objects seems to be to foster time payment sales through this agency. All loans on automobiles and all similar transactions are illegal if not registered with the Automobile Club of Italy.

To Seek Fewer Oversizes

WASHINGTON, Jan. 17.—A general conference of manufacturers, distributors and users on the simplification of spark plugs, piston and piston-ring oversizes, brake lining and roller bearings will be held in the General Motors Building, Detroit, Feb. 2 and 3, under the auspices of the National Committee of Metals Utilization and the Division of Simplified Practice of the U. S. Department of Commerce.

Plane Engine to Burn Oil

WASHINGTON, Jan. 17—Contracts for an oil burning airplane engine will be let soon by the U. S. Navy Department, Dr. Joseph S. Ames, of the National Advisory Committee for Aeronautics, told a House appropriations subcommittee this week. Successful tests have been made, he said, with an engine in which a fine spray of heavy oil is injected into a combustion chamber, igniting under pressure.

Calendar of Coming Events

SHOWS

Cairo .....Feb. 15-March 15
First International Motor Show.

Chicago .....Jan. 29-Feb. 5
National, Coliseum, National Automobile Chamber of Commerce, including special Shop Equipment Exhibit.

Chicago .....Jan. 29-Feb. 5
Annual Salon, Hotel Drake.

Copenhagen .....Feb. 18-27
Danish Automobile Exposition.

Geneva .....March 4-13
Palais des Expositions.

Los Angeles .....Feb. 12-19
Annual Salon, Hotel Biltmore.

CONVENTIONS

Automotive Electric Association, Electrical Service Meeting, Congress Hotel, Chicago .....Feb. 1-2

National Foreign Trade Council, Detroit .....May 25-27

National Safety Council, Mid-West Safety Congress, Hotel La Salle, Chicago .....Feb. 21

S. A. E.

Detroit, Jan. 25-28—Annual Meeting.

Detroit, Jan. 28—Carnival.

French Lick Springs, Ind., May 25-28—Summer Meeting.

New England, Feb. 10—Electric Drive as Motor Bus Transmission—C. Froesch.

RACES

Altoona, Pa. .....June 11
Atlantic City .....April 30
Charlotte, N. C. .....May 9
Fresno, Cal. .....April 21
Indianapolis .....May 30
Los Angeles .....Feb. 22
Los Angeles .....April 10
Salem, N. H. .....June 25